PRCS
Design & Construction Standards

January 2009

Loudoun County Department of Parks, Recreation and Community Services

PRCS
COUNTY OF LOUDOUN

Design and Construction Standards Manual

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January 2009

Prepared by:
Loudoun County Department of Parks, Recreation & Community Services

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At a business meeting of the Board of Supervisors of Loudoun County, Virginia, held in the County Government Center, Board of Supervisors' Meeting Room, 1 Harrison St., S.E., Leesburg, Virginia, on Wednesday, January 21, 2009 at 9:00 a.m.

IN RE: DEPARTMENT OF PARKS, RECREATION AND COMMUNITY SERVICES / CONSTRUCTION AND DESIGN STANDARDS

Mrs. Waters moved that the Board of Supervisors endorse the Design and Construction Standards for Parks, Recreation, and Community Services.

Seconded by Mr. Miller.

Voting on the Motion: Supervisors Buckley, Burton, Delgaudio, Miller and Waters- Yes; None – No; and Supervisors Burk, Kurtz, McGimsey and York – Absent for the Vote.

A COPY TESTE:

Jeanette Gilbert
DEPUTY CLERK FOR THE LOUDOUN
COUNTY BOARD OF SUPERVISORS

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Loudoun County, Virginia
Department of Parks, Recreation & Community Services
Design and Construction Standards Manual

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Introduction

This Design and Construction Standards Manual has been designed to improve descriptions and specifications regarding construction of Loudoun County Parks, Recreation and Community Services facilities. The product is a result of almost two years of monthly meetings held by representatives of the Department of Parks, Recreation and Community Services with several development companies who have been involved in building proffered recreation facilities, school representatives, and individuals who have been contracted to build these facilities. Our great appreciation goes to those who volunteered their time and talents to the project.

This document would not be of the current quality if it were not for the contribution of talent, expertise, and many hours of work by:

Jim Bonfils, Park Board member, Treasurer of Loudoun Soccer
Michael Capretti, Park Board member, Gulick Group
Will Cullen, Heritage Landscape Services
Steve Hahn, Lansdowne Development
Rick Herwig, Van Metre Homes
Kevin Lewis, Loudoun County Public Schools
George McGregor, Greenvest
Guy McNeil, Van Metre Homes
Mike Sawyers, ECS Limited
Steve Schulte, Brambleton Group, LC
Mack Smith, KT Enterprises
Randy Vlad, Loudoun County Public Schools

Chris Bresley, PRCS
Mike Burke, PRCS
Brian Fuller, PRCS
Chris Kenney, PRCS
Mark Millsap, PRCS
Mark Novak, PRCS
Diane Ryburn, PRCS
Steve Torpy, PRCS

In addition, we want to express our special thanks to the Board of Supervisors for their support and to the Parks, Recreation and Open Space Board for their input and support.

Each section of the previous design and construction guidelines was discussed, debated and rewritten in order to offer a unified standard for construction of facilities that will present a cohesive system. It will provide Loudoun's citizens with safe, properly-built facilities that will allow for more effective maintenance than is currently possible. If they are well-built, we will have a greater chance of providing the high quality facilities the Loudoun community requests and expects.

We will consistently strive for continuous improvements. Now that this document is approved, Loudoun County Parks, Recreation and Community Services plans to review and update it on an annual basis. Please let us know if you see something that we can improve.

Administration

SECTION 1.01 GENERAL REFERENCES FOR ALL SECTIONS

1. REFERENCES INCORPORATED

All work referenced by the following sections of the Loudoun County Department of Parks, Recreation and Community Services (PRCS) Design and Construction Standards (DCS) Manual is subject to the applicable provisions of:

1.1 Revised 1993 Loudoun County Zoning Ordinance (RZO)
1.2 Loudoun County Facilities Standards Manual (FSM)
1.3 Loudoun County Codified Ordinances
1.4 Virginia Erosion and Sediment Control Handbook
1.5 Sports Turf Management in Virginia Manual (Virginia Tech)
1.6 Virginia Department of Transportation Road and Bridge Specifications (VDOT)
1.7 American Concrete Institute (ACI)
1.8 American Society of Testing Materials (ASTM)
1.9 American Association of State Highway and Transportation Officials (AASHTO)
1.10 International Building Code (IBC)
1.11 Virginia Uniform Statewide Building Code (VUSBC)
1.12 Loudoun County Health Department (LCHD)
1.13 Loudoun County Sanitation Authority (LCSA)
1.14 Western Wood Products Association (WWPA)
1.15 Southern Pine Inspection Bureau (SPIB)
1.16 American Wood Preservers Association (AWPA)
1.17 American Institute of Timber Construction (AITC)
1.18 American Wood Preservers Bureau (AWPB)
1.19 National Forest Products Association (NFPA)
1.20 Southern Forest Products Association (SFPA)
1.21 Illuminating Engineering Society of North America (IESNA)
1.22 American National Standards Institute (ANSI)
1.23 American Sod Producers Association (ASPA)
1.24 Virginia Department of Historic Resources Guidelines for Archeological Investigations (DHR)

2. GENERAL REQUIREMENTS

2.1. The Contractor shall be responsible for and governed by all the requirements of references noted above.

2.2. Conflicts between references and these Design and Construction Standards not specifically detailed in approved plans shall be adjudicated by PRCS.

2.3. Where specific products are called out in these Design and Construction Standards, "or equal, as approved by PRCS" applies.

3. WAIVER LETTER

3.1. Any deviation from these Design and Construction Standards will require written approval of the Director of Parks, Recreation and Community Services.

Loudoun County Parks, Recreation and Community Services
Park/Amenity Checklist
Project:
Owner Rep:

		Date Req / Subm	Date of Meeting	Date of Approval	Initials	Attendance	Comments
Preconstruction Meeting							
	Review Plan						
	Perimeter						
	Tree/Environ/Arch/Etc Protection						
	Contractor Introduction						
	Amenity Stakeout						
	Borrow / Stockpile Plan						
Subgrade							
Irrigation							
Topsoil Installation							
Fine Grade							
Specifications Submittals							
Cut Sheets							
Other Amenities							
Materials							
Installation Seed/Sod							
Installation Trees/Shrubs							
Draft Operations and Maintenance Package							
As-Builts							
Pre-Inspection Walk							
Other Amenities Sign-off							
B&D Final Walk and Acceptance							
Conveyance and Withdrawal Documents							
PRCS Final Walk and Acceptance							
Final Operations and Maintenance Package							
Performance Bond Release							
E&S Bond Release							

Notes:
1. All inspections or field visits shall be requested with 48 hours prior notice.
2. This checklist is the reponsibility of the owner. Scanning the copy after signatures is strongly recommended.

Project Management

SECTION 2.01 PROJECT DOCUMENTATION

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This section includes: final cleaning, project record documents, operation and maintenance data, warranties, spare parts and maintenance materials, and final acceptance procedures.

2.2 Prior to commencement of the Project, the Contractor shall obtain all necessary County, State, and/or Federal permits, specifically including any required Loudoun County grading and/or building permits.

3. PROJECT RECORD DOCUMENTS

3.1 Maintain one (1) set (labeled 'PROJECT RECORD INFORMATION – JOB SET') of the following Record Documents and record actual revisions of the work:

3.1.1 Contract Drawings.

3.1.2 Specifications.

3.1.3 Addenda.

3.1.4 Change Orders and other Modifications to the Contract.

3.1.5 Approved shop drawings, product data, and samples.

3.1.6 Original and updated project schedules.

3.2 Store Record Documents separate from documents used for construction.

3.3 Record information concurrent with construction progress.

3.3.1 Make legible entries on each pertinent sheet of drawings, specifications, or other documents as necessary, in order to properly document the entry.

3.3.2 Accuracy will be such that PRCS may reasonably rely upon the information for preparation of Record Documents, and that PRCS may reasonably rely upon the information for future reference and research.

3.3.3 Entries will be recorded in a timely fashion upon performance or notification of a change or deviation.

3.4 Specifications – Legibly mark and record at each Product section description of actual Products installed, including the following, if different than specified:

3.4.1 Manufacturer's name and product model and number.

3.4.2 Product substitutions or alternates utilized.

3.4.3 Changes made by Addenda and Modifications.

3.5 Record Documents and Shop Drawings – Legibly mark each item to record actual construction including:

3.5.1 Measured depths of foundations in relation to finish datum.

3.5.2 Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.

3.5.3 Measured locations of appurtenances concealed in construction, referenced to visible and accessible features of the Work.

3.5.4 Field changes of dimension and detail.

3.5.5 Details not on Approved Drawings.

3.6 Delete Architect/Engineer title block from all documents. See Section 2.07 for As-Built Drawing specifications.

3.7 Submit documents to PRCS.

4. OPERATION AND MAINTENANCE DATA

4.1 O&M Manuals

4.1.1 Submit two sets prior to final inspection, bound in 8-1/2 x 11-inch text pages, three D-side ring capacity expansion binders with durable covers.

4.1.2 Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

4.1.3 Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

4.1.4 Prepare a Table of Contents for each volume, with each Product or

System description identified, typed on 24-pound white paper.

4.1.5 Part 1 – Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.

4.1.6 Part 2 – Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Applicable equipment and systems shall be clearly referenced within the documentation. Identify the following:

4.1.6.1 Significant design criteria.
4.1.6.2 List of Equipment.
4.1.6.3 Parts list for each component.
4.1.6.4 Operating instructions.
4.1.6.5 Maintenance instructions for equipment and systems.
4.1.6.6 Maintenance instructions for finish, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
4.1.6.7 Sequence of operation for all HVAC systems.

4.1.7 Part 3 – Project Documents and Certificates, including the following:

4.1.7.1 Shop drawings and product data.
4.1.7.2 Certificates.
4.1.7.3 Warranties.

4.1.8 Submit draft copy of completed volumes in accordance with the PROJECT REVIEW CHECKLIST, Section 1.02). This copy will be reviewed and returned with PRCS comments. Revise content of all document sets as required prior to final submission.

4.1.9 Submit revised, approved volumes, after final inspection. For those portions of the manual that may be submitted electronically, please provide a copy on CD or DVD for archive storage purposes.

4.2 Spare Parts and Maintenance Materials

4.2.1 Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections. Provide two copies of detailed lists of spare parts and extra materials. Submit copies in separate binders.

4.2.2 Deliver to Project site and place in location as directed; obtain receipt.

5. CLOSEOUT PROCEDURES

5.1 Substantial Completion.

5.1.1 Certificate of Substantial Completion (AIA DOC G704) unless project manager approves alternate documentation prior to initiation of work.

5.1.2 Provide submittals to PRCS that are required.

5.1.3 Attend pre-inspection walk-through with PRCS.

5.1.4 Submit completed checklist to PRCS.

5.1.5 PRCS may occupy portions of the site as agreed.

5.2 Final Cleaning

5.2.1 Complete punchlist prior to final clean.

5.2.2 Execute final cleaning prior to final inspection. Work area shall be dust-free; all glass areas polished and free of prints and streaks.

5.2.3 Clean all surfaces exposed to view; remove temporary labels, stains, and foreign substances.

5.2.4 Clean equipment and fixtures.

5.2.5 Clean debris from drainage systems and swales.

5.2.6 Clean site; sweep paved areas, rake clean landscaped surfaces.

5.2.7 Remove waste and surplus materials, rubbish, and construction facilities from the site and any adjoining areas that have received waste during construction.

5.3 Final Acceptance

5.3.1 Complete all punchlist items.

5.3.2 Complete final clean.

SECTION 2.02 COORDINATION AND MEETINGS

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections for County-built projects.

2. SCOPE

   2.1 Coordination and project conditions.

   2.2 Preconstruction meeting.

   2.3 Jurisdictional meetings.

   2.4 Site mobilization meeting.

   2.5 Layout and Field Engineering.

   2.6 Progress meetings.

   2.7 Progress reports.

   2.8 Pre-installation meetings.

   2.9 Examination.

   2.10 Preparation.

   2.11 Cutting and Patching.

3. COORDINATION AND PROJECT CONDITIONS

   3.1 Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to insure efficient and orderly sequence of installation of interdependent construction elements.

   3.2 Verify utility requirements and characteristics of operating equipment are compatible with utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

   3.3 Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.

3.4 After Beneficial Occupancy by PRCS, coordinate all access to site for correction of defective Work and Work not in accordance with Contract Documents, with PRCS to minimize disruption of PRCS's activities.

4. PRECONSTRUCTION MEETING

4.1 PRCS and Contractor shall schedule Pre-Construction meeting.

4.2 Attendance Required: PRCS, Designer, and Contractor(s), as determined by Project Manager.

4.3 Agenda:

4.3.1 Distribution of Contract Documents.

4.3.2 Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.

4.3.3 Designation of personnel representing the parties in Contract, and the Designer.

4.3.4 Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Construction Closeout procedures.

4.3.5 Scheduling.

4.3.6 Checklist Items

5. JURISDICTIONAL MEETINGS

5.1 Contractor shall coordinate, schedule, and attend meetings with Jurisdictional Agency personnel to issure compliance with applicable laws, rules, regulations, and permits. This may include Utility Companies, Local, State, and Federal Government Agencies, and specifically may include Loudoun County Department of Parks, Recreation & Community Services, Building & Development Field Inspectors and/or Virginia Department of Transportation Inspector.

6. SITE MOBILIZATION MEETING

6.1 Contractor is to schedule a meeting with PRCS at the Project site prior to Contractor occupancy. This meeting may be combined with Inspector's Pre-construction Conference with other jurisdictional agencies if required.

6.2 Attendance Required: PRCS, Designer, Contractor, Contractor's Superintendent, and major Subcontractors.

6.3 Agenda:

6.3.1 Use of premises by PRCS and Contractor.

6.3.2 PRCS's requirements.

6.3.3 Construction facilities and controls provided by PRCS.

6.3.4 Survey and layout.

6.3.5 Security and housekeeping procedures.

6.3.6 Schedules.

6.3.7 Procedures for testing.

6.3.8 Procedures for maintaining record documents.

7. PROGRESS MEETINGS

7.1 PRCS will schedule and administer meetings throughout progress of the work at intervals determined by PRCS.

7.2 PRCS will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

7.3 Attendance Required: General Contractor, Job superintendent, major Subcontractors and suppliers, PRCS, Designer, and PRCS's Consultant(s) as appropriate to agenda topics for each meeting.

7.4 Agenda:

7.4.1 Review minutes of previous meetings.

7.4.2 Review of Work progress.

7.4.3 Field observations, problems, and decisions.

7.4.4 Identification of problems that impede planned progress.

7.4.5 Review of submittals schedule and status of submittals.
7.4.6 Review of off-site fabrication and delivery schedules.

7.4.7 Maintenance of progress schedule.

7.4.8 Corrective measures to regain projected schedules.

7.4.9 Planned progress during succeeding work periods.

7.4.10 Coordination of projected progress.

7.4.11 Maintenance of quality and work standards.

7.4.12 Effect of proposed changes on progress schedule and coordination.

7.4.13 Other business relating to Work.

8. PROGRESS REPORTS

8.1 General

8.1.1 General Contractor and each Subcontractor will prepare a comprehensive daily log and maintain it during the entire project period.

8.1.2 Each Subcontractor will present a copy of the daily log to the General Contractor for compilation into weekly Progress Reports.

8.1.3 The General Contractor will present copies of Progress Reports to PRCS within three (3) working days of the end of the Progress Report period.

8.2 Report - Each Progress Report will include the following data for each day of the entire project period.

8.2.1 Manpower, by trade and number of personnel.

8.2.2 Work being performed.

8.2.3 Weather conditions and temperature.

8.2.4 Situations or circumstances that could delay work or give cause for claims for extension of time or added cost.

8.2.5 List of visitor's names, to include officials, PRCS's representatives and other authorities.

8.2.6 Record of daily observations.
8.2.7 Deliveries.

8.2.8 Equipment on site.

9. PRE-INSTALLATION MEETING

9.1 When required in individual specification sections, a pre-installation meeting will be held at the site prior to commencing work of the section.

9.2 Require attendance of parties directly affecting, or affected by, work of the specific section.

9.3 Notify PRCS three (3) days in advance of meeting date.

SECTION 2.03 QUALITY CONTROL

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections for County-built projects.

2. SCOPE

This section includes:

2.1 Quality assurance and control of installation.

2.2 References.

2.3 Inspection and testing laboratory services.

2.4 Manufacturers' field services and reports.

3. QUALITY ASSURANCE/CONTROL OF INSTALLATION

3.1 Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

3.2 Comply fully with manufacturers' instructions, including each step in sequence.

3.3 Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

3.4 Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

3.5 Perform work by persons qualified to produce workmanship of specified quality.

3.6 Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

4. REFERENCES

4.1 Conform to reference standard by date of issue current on date of Contract Documents.

4.2 Obtain copies of standards when required by Contract Documents.

4.3 Should specified reference standards conflict with Contract Documents, request clarification from PRCS before proceeding.

4.4 The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

5. INSPECTION AND TESTING SERVICES

5.1 The Contractor will be responsible for obtaining County and/or State inspections as required for each trade and element of construction.

5.2 The Contractor will be responsible for submitting all laboratory and testing reports for materials used on this project as specified in individual specification sections and as required by PRCS.

5.3 Reports will be submitted to PRCS indicating results of tests and indicating compliance or non-compliance with Contract Documents.

5.4 Retesting required because of non-conformance to specified requirements shall be performed by the same firm on instructions by PRCS. Payment for retesting will be the responsibility of the Contractor.

6. MANUFACTURERS' FIELD SERVICES AND REPORTS

6.1 Submit qualifications of observer to PRCS 30 days in advance of required observations. Observer is subject to approval by PRCS.

6.2 When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

6.3 Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

6.4 Submit report in duplicate within 30 days of observation to PRCS for review.

SECTION 2.04 SUBMITTALS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections for County-built projects.

2. SECTION INCLUDES

2.1 Submittal procedures.

2.1.1 General information required.

2.1.2 Required meetings.

2.1.3 Construction progress schedule.

2.1.4 Proposed products list.

2.1.5 Shop drawings.

2.1.6 Product data.

2.1.7 Samples.

2.1.8 Manufacturers' instructions and manuals.

2.1.9 Manufacturers' certificates.

2.2 Required Testing.

3. SUBMITTAL PROCEDURES

3.1 Transmit each submittal with transmittal form. Maintain a submittal log, updated upon each submittal and approval.

3.2 Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic suffix.

3.3 Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

3.4 Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

3.5 Contractor shall submit a submittal schedule within five (5) days of signing agreement between PRCS and Contractor, and shall obtain approval of submittal schedule prior to ordering and fabricating.

3.6 Schedule submittals to expedite the Project. Coordinate submission of related items.

3.7 Submittals shall be provided by the Contractor to PRCS for review and approval prior to ordering and fabrication.

3.8 Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

3.9 Provide space for Contractor and PRCS review stamps.

3.10 Revise and resubmit submittals as required, identify all changes made since previous submittal.

3.11 Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

4. GENERAL INFORMATION REQUIRED

4.1 Submit the following:

4.1.1 Site Superintendent(s) resume(s).

4.1.2 Emergency phone number, where someone can be reached 24 hours.

4.1.3 Schedule of Values.

4.1.4 Submittal Schedule.

4.1.5 List of Subcontractors.

4.1.6 Name of surveyor and proof of Virginia P.E. license or Virginia Surveyor license.

4.1.7 As-built drawings per specifications (See Section 2.07).

5. REQUIRED MEETINGS

5.1 Pre-construction meeting prior to Notice to Proceed.

5.2 Stakeout approval for layout and grading.

5.3 Layout, review and approval, including:

5.4 Approval of fine grading & seed bed preparation prior to seeding.

5.5 PRCS substantial completion inspection.

5.6 Monthly progress meetings to be scheduled for the same time and same day throughout the project. Progress meetings will be scheduled by PRCS and Contractor at the pre-construction meeting.

6. CONSTRUCTION PROGRESS SCHEDULE

6.1 Submit four (4) copies of initial progress schedule immediately after being awarded the Contract.

6.2 Revise and resubmit as required. Maintain original and updated schedules on site in accordance with PROJECT DOCUMENTATION, Section 2.01.

6.3 Submit revised schedule with each Application for Payment, identifying changes since previous version.

6.4 Submit a horizontal bar chart with separate line for each section of Work broken down into two (2) week segments.

6.5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities.

6.6 Indicate estimated percentage of completion for each item of Work at each submission.

6.7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by PRCS.

7. PROPOSED PRODUCTS LIST

7.1 Within ten (10) days after date of PRCS-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

7.2 For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

8. SHOP DRAWINGS

8.1 Submit the number of opaque reproductions which Contractor requires, plus three (3) copies which will be retained by PRCS.

8.2 Submit shop drawings for all equipment related to:

9. PRODUCT DATA

9.1 Concrete mix design for slab and footings.

9.2 Asphalt mix design for trail.

9.3 Product information for lime and fertilizer.

9.4 Seed mix certification.

9.5 Aggregate certifications for concrete mix.

9.6 Submit the number of copies required by the Contractor, plus three (3) copies to be retained by PRCS.

9.7 Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

9.8 Submit product information including color schedule and installation instructions for shelter, picnic tables, wood-polymer composite decking and storage chest.

10. SAMPLES (REQUIRED IF PRODUCT NOT A STANDARD SPECIFICATION)

10.1 Empty bag of lime, fertilizer and seed tickets.

10.2 Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices.

10.3 Submit samples of paint/stain to be used on site amenities for PRCS's approval.

10.4 Include identification on each sample, with full Project information.

10.5 Submit samples of safety fence, posts and signs to be used to warn park patrons of ongoing construction activities.

11. MANUFACTURER'S INSTRUCTIONS AND MANUALS

11.1 Submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, finishing, and maintenance in quantities specified for Product Data.

11.2 Identify conflicts between manufacturers' instructions and Contract Documents.

12. MANUFACTURER'S CERTIFICATES

12.1 Insure that all materials or products conform to or exceed specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.

12.2 Certificates may be recent or previous test results on material or Product, but must be acceptable to PRCS.

13. REQUIRED TESTING

13.1 Contractor to coordinate onsite testing with County's engineering representative.

13.2 Compaction testing at PRCS's expense for subgrade and subbase under concrete slabs, footings, and asphalt paving.

13.3 The County will employ a testing laboratory to perform concrete quality control testing and submit certified test reports.

13.4 The County will employ a geotechnical engineer to verify the soil bearing requirement of 1500 psf.

SECTION 2.05 SUPPLEMENTAL CONDITIONS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections for County-built projects.

2. SUPPLEMENTAL CONDITIONS

2.1 The Contractor will verify all dimensions, locations, elevations, and details for all specified items before beginning construction. The Contractor will notify PRCS at once if there is a discrepancy between the plans and specifications. Written dimensions prevail. Scaled dimensions will be approved by PRCS before construction begins.

2.2 The Contractor is urged to read **ARTICLE 11 INSURANCE REQUIREMENTS** of the General Conditions regarding monetary coverage limits.

2.3 In accordance with the **GENERAL CONDITIONS**, PRCS will review proposed "or equals" at any point in the bidding or contract phases, but may not be able to provide a formal response prior to the bid opening unless the following procedure is complied with. Nothing stated herein is intended to preclude or supersede **GENERAL CONDITIONS** Article 7.89 "Or Equal" Clause.

2.4 Bidders who are considering the submission of "Or Equal" equipment for PRCS review will submit a written request no later than ten (10) calendar days prior to the Bid Opening date.

2.4.1 The submission(s) will include, but are not limited to the following:

2.4.1.1 A specific listing of each piece of equipment proposed "as equal" and which piece of specified equipment it would replace.

2.4.1.2 Appropriate manufacturer's shop drawings, promotional literature, and installation instructions.

2.4.1.3 A layout drawing showing that the equipment configuration of the proposed "or equal(s)" is the same as that shown on the plans.

2.4.1.4 A detailed listing of comparisons responding to the technical criteria contained in these specifications.

2.5 The Contractor will be responsible for notifying all utility companies through MISS UTILITY at (800) 257-7777 to ensure all lines in the work area are located and marked for reference. The Contractor will review the plans to ensure that all utility lines that have been field located are shown on the plans. The Contractor will notify PRCS immediately if utilities are found to be other than shown on the plans.

2.6 Shop drawings, Product Data, Samples, and Certifications will be submitted by the Contractor to PRCS for review and approval prior to ordering and fabrication. The Contractor will certify that submittals meet the requirements of the plans and specifications. Shop drawings, Product Data, and samples will be submitted for all equipment and materials related to the following:

Off-site Road Improvements
Entrance Road and Parking
Tennis Courts
Basketball Courts
Soccer/Football Fields
Baseball/Softball Fields
Site Furnishings - Benches, Bollards, Trash Cans
Signage
Trails and Sidewalks
Exercise Equipment
Lighting Systems
Picnic Areas
Play Apparatus
Storm Drainage System
Sanitary Sewer System
Electrical Systems
Phone & Data System
Finish Materials

2.7 The Contractor will maintain cleanliness of the construction entrance during his operations. Roads leading to the site will be clean at the end of each day. The Contractor will wash vehicle tires before leaving the site if the construction entrance does not remove sufficient mud.

2.8 The construction sign will be installed within ten (10) calendar days of the Contractor's receipt of the written notice-to-proceed, and prior to any construction. The Contractor will receive approval from PRCS for the format and location of the sign prior to installation.

2.9 Assume no water is available on site. The Contractor will be responsible for the provision of water required to complete the work in this project.

2.10 The Contractor will have all staging and storage areas approved by PRCS prior to storage of equipment and material.

2.11 Excavation is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions.

2.12 The Contractor is responsible for coordination with the Virginia Department of Transportation (VDOT) to ensure that the applicable safety precautions and measures are observed when completing work within the VDOT right-of-way.

2.13 The Contractor will submit a complete package of manufacturer's installation instructions, shop drawings, parts lists, maintenance and operating manuals, and product data of all equipment and manufactured items installed in this work. The complete package will be submitted at the substantial completion inspection.

2.14 The Contractor is responsible for maintaining a safe and secure site at all times, until the Certificate of Occupancy has been issued and the project is accepted by PRCS.

SECTION 2.06 GENERAL MATERIAL & EQUIPMENT

1. GENERAL

    1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections for County-built projects.

    1.2 Products.

    1.3 Transportation and handling.

    1.4 Storage and protection.

    1.5 Product options.

    1.6 Substitutions.

2. RELATED SECTIONS

    2.1 QUALITY CONTROL

3. PRODUCTS

    3.1 Products: Means new material, components, equipment, fixtures and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.

    3.2 Provide interchangeable components of the same manufacturer, for similar components.

4. TRANSPORTATION & HANDLING

    4.1 Transport and handle products in accordance with manufacturer's instructions.

    4.2 Promptly inspect shipments to assure that products comply with requirements and products are undamaged.

    4.3 Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.

5. STORAGE & PROTECTION

    5.1 Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

5.2 For exterior storage of fabricated products, place on sloped supports, above ground.

5.3 Provide off-site storage and protection when site does not permit on-site storage or protection.

5.4 Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

5.5 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

5.6 Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.

5.7 Arrange storage of products to permit access for inspection. Periodically inspect to issure products are undamaged and are maintained under specified conditions.

6. PRODUCT OPTIONS

6.1 Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

6.2 Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

7. SUBSTITUTIONS

7.1 Project Manager will consider requests for Substitutions only within 14 calendar days after date established in Notice to Proceed.

7.2 Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

7.3 Any substitution must be requested in writing and clearly indicated.

7.4 Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

7.5 A request constitutes a representation that the Contractor:

7.5.1 Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

7.5.2 Will provide the same warranty for the Substitution as for the specified product.

7.5.3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to PRCS.

7.5.4 Waives claims for additional costs or time extension which may subsequently become apparent.

7.5.5 Will reimburse PRCS for review or redesign services associated with re-approval by authorities.

7.6 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

7.7 Substitution Submittal Procedure:

7.7.1 Submit three (3) copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

7.7.2 Submit shop drawings, product data and certified test results attesting to the proposed product equivalence.

7.7.3 The Project Manager will notify the Contractor, in writing, of decision to accept or reject request.

SECTION 2.07 AS-BUILT DRAWINGS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The Contractor shall submit to PRCS one set of reproducible as-built drawings of all new construction prior to final application for payment. The Contractor shall also submit to Loudoun County as-builts in accordance with the Loudoun County Facilities Standards Manual (FSM). The location and arrangement of architectural, structural, mechanical and electrical work as installed, as well as any site improvements, shall be shown on the as-built drawings in the detail described below. PRCS also requests electronic CAD files of above, if available. CAD files should be in AutoCAD (.dwg format) and should conform to requirements of current version of NIST National CAD standards (V3.1 or later).

3. REQUIREMENTS

3.1 All as-builts will be prepared by a surveyor or engineer duly authorized by the State of Virginia to prepare same.

4. DESCRIPTION OF WORK

4.1 Prepare as-builts of the entire area within the limits of the Project, depicting the following:

4.2 Building: Location of and all portions of the building including utilities, room dimensions, control locations, panels, doors, etc.

4.3 Site: On-site paving, storm drainage, utilities—including gas, electric, water, cable, etc. both overhead and underground; topography shall also be reflected. Locations of all storm pipes and culverts and outfalls and rip rap, pipe and culvert sizes, lengths, top and invert elevations, percent of grade of pipes and culvert, swale inverts, and slope of swale.

4.4 Trails: Spot elevations on entire length of trail at 7.5 meter intervals centered on trail. Include elevations on top and bottom of embankments, location of benches, handrail, and rip-rap.

4.5 Courts/Fields: elevations of all finished courts and/or ballfields shall be depicted in 2’ contours with spot elevations at the middle and perimeter lines.

4.6 Utilities: Location of all utilities including main irrigation lines, feeder irrigation lines, drains and drain lines, water, sewer and electrical feeder and branch lines, conduits, ballfield light conduits, phone and data lines. Include depth of burial of all underground facility.

Site Preparation & Earthwork

SECTION 3.01 EARTHWORK

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

1.2 Review all Drawings and all Sections of these Standards for provisions affecting the work of this Article.

1.3 Review all applicable drawings for environmentally sensitive areas and delineation thereof. The Contractor shall use extreme care to prohibit any unauthorized disturbance or damage within these areas.

1.4 All work shall be as depicted in the Grading Plans and in accordance with the Loudoun County Facilities Standards Manual (FSM) and Virginia Department of Transportation (VDOT) Road and Bridge Specifications.

2. SCOPE

2.1 The work covered by this Article consists of the following:

2.1.1 Preparing and grading subgrades for slabs-on-grade, walks, pavement, and landscaping.

2.1.2 Excavating and backfilling for buildings and structures.

2.1.3 Gravel and moisture-control fill course for slabs-on-grade.

2.1.4 Subbase course for walks and pavement.

2.1.5 Excavating and backfilling trenches within building lines.

2.1.6 Excavating and backfilling for underground mechanical and electrical utilities and appurtenances.

3. DEFINITIONS

3.1 Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.

3.2 All excavation shall be defined as "Unclassified Excavation" excluding rock. Where reference is made to "Excavation" in these specifications it shall be assumed to be defined as "Unclassified Excavation", excluding rock. The term "rock" as used herein, is defined to be solid material that cannot be removed with a 3/4 cubic yard capacity power shovel with a bucket curling force and stick crowd force of 35,000 lbs. each. If any disagreement occurs between PRCS and Contractor, the Contractor shall retain a qualified testing laboratory at his expense, which is approved by PRCS, to determine if the material in question is not able to be worked with standard earth moving equipment.

3.3 Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, gravel fill, or topsoil materials.

3.4 Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.

3.5 Subbase Course: The layer placed between the subgrade and base course in a paving system or the layer placed between the subgrade of a pavement walk or walk.

3.6 Base Course: The layer placed between the subbase and surface pavement in a paving system.

3.7 Gravel Fill: Course of washed granular material supporting slab-on-grade placed to cutoff upward capillary flow of pore water.

3.8 Unauthorized over excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by PRCS. Unauthorized excavations, as well as remedial work directed by PRCS, shall be at the Contractor's expense.

3.9 Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below ground surface.

3.10 Utilities include on-site underground pipes, conduits, ducts, and cables, as well as ground services within building lines.

4. SUBMITTALS

4.1 Submit a sample of each type of warning tape or flagging.

5. QUALITY ASSURANCE

5.1 Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.

5.2 Testing and Inspection Service: Contractor will employ a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.

5.3 Before commencing earthwork, meet with representatives of the governing authorities, PRCS, Architect, Consultants, Geotechnical Engineer, Testing Agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least three (3) working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.

6. PROJECT CONDITIONS

6.1 Existing Utilities: Do not interrupt existing utilities serving facilities occupied by PRCS or others except when permitted in writing by PRCS and then only after acceptable temporary utility services have been provided.

6.2 Provide a minimum 48-hour notice to PRCS and receive written notice to proceed before interrupting any utility.

6.3 Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shutoff services if lines are active.

7. MATERIALS

7.1 Soil Materials

7.1.1 General: Provide approved borrow soil materials from off-site when sufficient approved soil materials are not available from excavations.

7.1.2 Satisfactory Soil Materials: Materials used in establishing grades within limits of buildings, paved areas, athletic fields, grass areas, etc., which have been approved for use by the Geotechnical Engineer or Testing Agency.

7.1.3 Structural Backfill Materials: Satisfactory soil materials free of rock or gravel larger than 3" in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter, and meeting the requirements of 7.1.5 and 7.1.6 for building and paved areas, respectively .

7.1.4 Structural Fill Materials: Satisfactory soil materials free of rock or gravel larger than 6" in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter, and meeting the requirements of 7.1.5 and 7.1.6 for building and paved areas, respectively.

7.1.5 Structural Backfill and fill material within the building perimeter and extending a minimum of 20-feet beyond the building exterior walls shall be satisfactory excavated or borrow material with a liquid limit less than 40 and a plasticity index less than 20.

7.1.6 Backfill and fill material within the perimeter of paved areas and extending a minimum of ten (10) feet beyond the perimeter of paved areas shall be satisfactory excavated or borrow material with a liquid limit less than 40 and a plasticity index less than 20.

7.1.7 Backfill and fill for grass areas shall be satisfactory excavated or borrow material. Fill material shall be approved by the Geotechnical Engineer or Testing Agency prior to placement.

7.1.8 Subbase and Base Material: Naturally or artificially upgraded mixture of crushed gravel, crushed stone, or crushed slag in accordance with VDOT Specification for Type I, 21 A or 21B aggregate.

7.1.9 Bedding Material: Subbase or base materials with 100 percent passing a one (1)inch sieve and not more than eight (8) percent passing a No. 200 sieve.

7.1.10 Gravel: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, ASTM D448, coarse aggregate grading size 57, with 100 percent passing a 1-1/2inch sieve and not more than five (5) percent, passing a No. 8 sieve.

7.1.11 Filtering Material: Evenly graded mixture of natural or crushed gravel or crushed stone and natural sand, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 50 sieve.

7.1.12 Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

7.2 Accessories

7.2.1 Detectable Warning Tape: Acid-and alkali-resistant polyethylene film warning tape, manufactured for marking and identifying underground utilities, six (6) inches wide and four (4) mils thick minimum, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 2'-6" deep.

7.2.2 Tape Colors: Provide tape colors to utilities as follows:

7.2.2.1 Red: Electric
7.2.2.2 Yellow: Gas, oil, steam, and dangerous materials.
7.2.2.3 Orange: Telephone and other communications.
7.2.2.4 Blue: Water systems.
7.2.2.5 Green: Sewer systems.

8. METHOD

8.1 Preparation

8.1.1 Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

8.1.2 Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

8.2 Dewatering

8.2.1 Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

8.2.2 Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

8.3 Excavation

8.3.1 Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

8.4 Stability of Excavations

8.4.1 Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.

8.5 Excavation for Structures

8.5.1 Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 feet. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspections.

8.5.2 Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement or place a clean concrete mud mat below the design bottom of the footing in order to protect the bearing surface. Trim bottoms to required lines and grades to leave solid base to receive other work.

8.5.3 Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

8.6 Excavation for Walks and Pavement

8.6.1 Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

8.7 Approval of Subgrade

8.7.1 Notify PRCS when excavations have reached required subgrade.

8.7.2 Provide PRCS with Geotechnical Engineers reports prior to sign-off on checklist.

8.7.3 When PRCS determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed by the Geotechnical Engineer or Testing Agency.

8.7.4 Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by PRCS.

8.8 Storage of Soil Materials

8.8.1 Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Stabilize to prevent wind-blown dust in accordance with the requirements of Virginia Erosion and Sediment Control Handbook.

8.8.1.1 Stockpile soil materials away from edge of excavations. Do not store anything within the drip line of trees to be saved.

8.9 Backfill

8.9.1 Backfill excavations promptly, but not before completing the following:

8.9.1.1 Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.

8.9.1.2 Surveying locations of underground utilities for record documents. Record location of utilities on as-built drawings. Place detectable warning tape over all utilities. (See paragraph 7.2 of this Section for tape specification.)

8.9.1.3 Testing, inspecting, and approval of underground utilities.

8.9.1.4 Concrete formwork removal.

8.9.1.5 Removal of trash and debris from excavation.

8.9.1.6 Removal of temporary shoring and bracing, and sheeting.

8.9.1.7 Installing permanent or temporary horizontal bracing on horizontally supported walls.

8.10 Warning Tape

8.10.1 Install warning tape directly above utilities, sleeves and conduit, 12 inches below finished grade, except six (6) inches below subgrade under pavements and slabs.

8.11 Fill unrelated to ballfields

8.11.1 Preparation: Remove vegetation, topsoil, debris, wet and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills. Prior to fill placement, subgrade areas shall be evaluated and certified by Testing Agency to be appropriate for application. All soft or unsuitable material exposed shall be removed and replaced by the Contractor with compacted satisfactory borrow material.

8.11.1.1 Plow or break up sloped surfaces steeper than one (1) foot vertical to four (4) feet horizontal so fill material will bond with existing surface.

8.11.2 When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and re-compact to required density.

8.11.3 Place fill material in layers to required elevations for each location listed below.

8.11.3.1 Under grass, use satisfactory excavated or borrowed soil material.

8.11.3.2 Under walks and pavements, use subbase, base material, or satisfactory excavated or borrow soil material.

8.11.3.3 Under steps and ramps, use subbase material. Under building slabs, use gravel fill material.

8.11.3.4 Under footings and foundations, use satisfactory excavated or borrow soil material.

8.12 Moisture Control

8.12.1 Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 20 percent of optimum moisture content, per Sports Turf Management in Virginia Manual specifications.

8.12.1.1 Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

8.12.1.2 Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density.

8.12.1.3 Stockpile or spread and dry removed wet satisfactory soil material.

8.13 Compaction

8.13.1 Place backfill and fill materials in layers not more than eight (8) inches in loose depth for material compacted by heavy compaction equipment, and not more than four (4) inches in loose depth for material compacted by hand-operated tampers.

8.13.2 Place backfill and fill materials evenly on all side of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.

8.13.3 Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to VTM-1.

8.13.3.1 Under structures, building slabs, steps, and pavements, compact the top 12 inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

8.13.3.2 Under walkways, compact the top six (6) inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

8.13.3.3 Under turf or unpaved areas, compact the top six (6) inches below subgrade and each layer of backfill or fill material at 90 percent maximum dry density.

8.13.3.4 Under athletic field areas, compact in accordance with the Atheletic Field Fill Detail (See Drawing PF-10.0 in Appendix B).

8.14 Grading

8.14.1 General: Uniformly grade areas to a smooth surface free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

8.14.1.1 Provide a smooth transition between existing adjacent grades and new grades.

8.14.1.2 Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.

8.14.2 Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

8.14.2.1 Turf or Unpaved Areas: Plus or minus 0.10 feet.
8.14.2.2 Walks: Plus or minus 0.10 feet.
8.14.2.3 Pavements: Plus or minus 1/2 inch.

8.14.3 Grading Inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

8.15 Subbase and Base Courses

8.15.1 Under pavements and walks, place subbase course material on prepared subgrades. Place base course material over subbases to pavements.

8.15.1.1 Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections and thickness in accordance with VDOT requirements.

8.15.1.2 Shape subbase and base to required crown elevations and cross-slope grades.

8.15.1.3 When thickness of compacted subbase or base course is six (6) inches or less, place materials in a single layer.

8.15.1.4 When thickness of compacted subbase or base course exceeds six (6) inches, place materials in equal layers, with no layer more than six (6) inches thick or less than three (3) inches thick when compacted.

8.15.2 Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders at least 12 inches wide of acceptable soil materials and compact simultaneously with each subbase and base layer.

8.16 Gravel Fill

8.16.1 Under slabs-on-grade, place gravel fill course on prepared subgrade. Compact gravel fill to required cross sections and thickness.

8.16.2 When compacted thickness of gravel fill is six (6) inches or less, place materials in a single layer.

8.16.3 When compacted thickness of gravel fill exceeds six (6) inches thick, place materials in equal layers, with no layer more than six (6) inches thick or less than three (3) inches thick when compacted.

8.17 Field Quality Control

8.17.1 Testing Agency Services: Each lift of fill or backfill and each subgrade shall be monitored and tested by the Geotechnical Engineer or Testing Agency in accordance with this section. Do not proceed until test results for previously completed work verify compliance with requirements.

8.17.1.1 Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), ASTM D 2937 (drive cylinder method), or ASTM D 2922 (Nuclear Method), as applicable.

8.17.1.2 When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gauges at beginning of work.

8.17.1.3 Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata.

8.17.1.4 Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2,500 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

8.17.1.5 Foundation Wall Backfill: In each compacted backfill layer, perform at least one field in-place density test for each 50 feet or less of trench, but no fewer than two (2) tests.

8.17.2 When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, re-compact and retest until required density is obtained.

8.18 Protection and Remediation

8.18.1 Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

8.18.2 Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.

8.18.3 Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

8.18.4 Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the extent possible.

8.19 Disposal of Surplus Materials

8.19.1 Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off of the property.

8.20 Refer also to Athletic Field Fill Detail PF-10.0 for additional specifications.

SECTION 3.02 ROUGH AND FINE GRADING

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 As specified in an approved Erosion and Sediment Control Plan Narrative, the Contractor shall strip, store and re-spread topsoil in designated areas of grading and construction and shall perform all rough and fine grading required to complete work as shown on the approved drawings.

3. STRIPPING OF TOPSOIL

3.1 Where required by approved drawings, topsoil shall be stripped. Grass and similar light organic matter may be left to decompose with the topsoil. All topsoil (including sod) shall be reused on the project where required. Any excess topsoil or sod not required for the job shall be removed from the site and disposed of by the Contractor, unless PRCS requests it to remain.

3.2 Any excess topsoil removed from the site must be disposed of in a manner consistent with the Virginia Erosion and Sediment Control Regulations regarding offsite areas.

4. STORAGE OF TOPSOIL

4.1 Topsoil shall be kept separate from other excavated materials and stored in stockpiles so that it will not be subject to erosion and moisture loss or saturation and does not interfere with subsequent construction or materials storage. It shall be stockpiled at the site, in a location approved by PRCS. Stockpiling of materials not associated with construction of park property shall not be allowed without prior written approval; such approved stockpiling shall be at location identified at pre-construction meeting and noted on project checklist.

5. EXCAVATION

5.1 Following the stripping of topsoil, excavation within the grading limits of the project shall be performed to the grades indicated on the drawings. All suitable excavated material shall be transported to and placed in fill areas shown on the drawings. Where rock or other unsuitable material is encountered, the same shall be removed to one-half foot below established subgrade. In areas to receive landscaping, remove to depth appropriate to accommodate root ball / planting. Materials removed below grade shall be replaced with approved material, thoroughly compacted to a density equal to the adjacent areas, using suitable equipment. During construction, excavation and filling shall be performed in a manner and sequence that will provide drainage at all times. Spring or seepage water encountered shall be reported to PRCS and Geotechnical Engineer.

6. STORAGE OF SUBSOIL

6.1 Excess subsoil shall be disposed of off the property by the Contractor. Subsoil shall be kept separate from other excavated materials and stored in stockpiles so that it shall not be subject to abnormal erosion and loss and does not interfere with subsequent construction, material storage, etc. Subsoil shall not be stored in such a way as to mix with stockpiled topsoil.

6.2 Any subsoil removed from the site must be disposed of in a manner consistent with the Virginia Erosion and Sediment Control Regulations regarding offsite areas.

7. EXCAVATION OF DITCHES AND SWALES

7.1 Swales shall be constructed in accordance with OPEN DRAINAGE DITCHES AND SWALES, Section 3.09. Swales shall be constructed accurately to the cross sections and grades indicated on the drawings. All gutters, swales and ditches shall be kept free of detrimental quantities of debris, or silt and so finished that they will drain readily. They shall be graded smooth so there are no bumps or depressions to impede drainage flow.

8. ROCK EXCAVATION

8.1 All rough or sloping rock shall be brought to level beds in steps as required. Rocks or boulders in pipe trenches shall be excavated to not less than eight inches below bottom of pipe and the trench brought to proper grade with firmly tamped earth.

8.2 Blasting may be done only when authorized and when in accordance with local and state ordinances.

9. FINISHED GRADE

9.1 Immediately following replacement of topsoil, the entire area shall be disked and raked free of stones and debris over one inch nominal size. All such stone and debris shall be removed from the premises.

9.2 Topsoil shall not be placed when either the topsoil or subgrade is frozen, excessively wet or in a condition otherwise detrimental to the proposed planting or to proper grading.

9.3 The finished surface shall be free of debris and stones, smooth and true to grades shown on the drawings, with a maximum tolerance of 0.1 foot and ready for sodding or seeding.

9.4 Refer to LANDSCAPING AND SITE STANDARDS, Section 6.07, for additional specifications.

10. SUBGRADE PREPARATION

10.1 The subgrade of any area which is to receive bituminous or Portland Cement paving will be prepared in accordance with Section 305 of the current VDOT Specifications (i.e., multi-use courts, tennis courts, roads, parking lots, curbing, concrete slabs, sidewalks, etc.).

11. PROTECTION OF SERVICE LINES AND UTILITIES

11.1 Existing and newly installed utilities shall be protected and safeguarded from damage during grading operation and if damaged, will be repaired immediately in like manner and materials as the original by the Contractor at his own expense. Installation of utilities shall honor the drainage divides and swales on the approved plans. The Contractor shall coordinate utility stub-up locations with PRCS and utility company prior to placement.

SECTION 3.03 CLEARING AND RELATED WORK

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

1.2 PRCS may request modifications to plans for clearing and related work on a site specific basis at the pre-construction meeting.

1.3 No clearing or related work on site is to occur prior to pre-construction meeting.

2. SCOPE

2.1 Prior to grading and construction operations, clearing and grubbing shall be accomplished as specified herein and in accordance with the Erosion & Sediment Control Plans and Narrative from the approved plans.

3. CLEARING AND GRUBBING

3.1 Clearing shall consist of the complete removal from above the surface of the existing ground, all trees (not to remain), shrubs, brush, down timber, rotten wood, heavy growth of grass and weeds, vines, fences and incidental structures and all other debris. All trees to remain within the Limits of Clearing and Grading shall be protected from damage during the course of construction in accordance with State and County standards.

3.2 Grubbing shall consist of the complete removal of all stumps, root mats and stubs, buried logs and other debris to a minimum of two feet below finished grade.

4. DISPOSAL OF CLEARED MATERIAL

4.1 All timber except that as may be ordered salvaged, including all logs, stumps, brush, rotten wood and other refuse from the clearing operations shall be disposed of off-site. The Contractor will be responsible for compliance with all state and local laws and regulations relative to the disposal of waste material. No burning shall be allowed on site unless permitted by Loudoun County.

4.2 If agreed to by PRCS, the Contractor may elect to chip timber. It shall be placed as designated by PRCS. All chipped material shall become the property of PRCS.

4.3 All waste materials shall be disposed of off the park property by the Contractor.

5. PROTECTION OF TREES TO REMAIN

5.1 The Contractor shall be responsible for the protection of tops, trunks and roots of existing trees that are to remain. Those subject to construction damage shall be boxed and protected (i.e., no standing water or stock piles of topsoil permitted within branch spread of trees). Dead branches and limbs interfering with the construction shall be removed without injury to the trunks. Any trees damaged by operations shall be repaired to the satisfaction of PRCS by competent arborists, at the Contractor's expense. Any tree damaged beyond repair shall be grubbed and removed at the Contractor's expense. The tree shall be replaced at the Contractor's expense by a tree specified by PRCS Project Manager.

SECTION 3.04 EXTERIOR DEMOLITION

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. DEMOLITION

2.1 Building foundation walls shall be demolished to four feet below the proposed line of finished grade. Basements shall be filled with approved material. All paved cellar floors shall be broken into sections not exceeding three feet square to prevent the accumulation of water. All paved concrete slabs resting on the earth, forming walks and driveways, or first floor slabs of buildings without basements shall be demolished and removed from the site.

2.2 Any building scheduled for demolition shall be offered to the Loudoun County Department of Fire, Rescue, and Emergency Management for potential training opportunities prior to final disposal of cleared material.

3. UTILITIES

3.1 The Contractor shall notify in writing each of the utility companies owning or controlling any services or appurtenances which may be affected by the work and PRCS. Sufficient notice shall be given to permit utilities removal of meters, wires, poles, etc. Contractor is to coordinate notice and utility's work.

3.2 Copies of notices signed by the utility company shall be furnished to PRCS as proof of receipt.

4. DISPOSAL OF CLEARED MATERIAL

4.1 All demolished buildings shall become the property of the Contractor and shall be disposed of off-site, unless otherwise proffered or noted at preconstruction meeting.

4.2 Burning shall not be permitted unless previously approved by PRCS.

4.3 The Contractor shall be required to clear and dispose off-site, all debris and unsuitable materials stored there and resulting from demolition, backfilling, and rough grading.

SECTION 3.05 START-UP / TEMPORARY UTILITIES AND CONTROLS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 Temporary Utilities: Electricity, telephone service, water, and sanitary facilities.

2.2 Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.

2.3 Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary buildings.

3. EXECUTION

3.1 TEMPORARY ELECTRICITY

3.1.1 Provide and pay for electrical service, at Contractor's option.

3.1.2 Provide temporary electric feeder from electrical utility. Power consumption shall not disrupt PRCS or public use of the site.

3.2 BARRIERS

3.2.1 Provide barriers to prevent unauthorized entry to construction areas, and to protect new facilities from damage from construction operations.

3.2.2 Provide temporary barriers around all excavations during construction to prevent potential accidents.

3.2.3 Provide barricades required by governing authorities for public rights-of-way and for public access.

3.2.4 In accordance with the Virginia State Erosion and Sediment Handbook and Loudoun County Codified Ordinance 1220 provide protection for plant life designated to remain. Replace damaged plant life.

3.2.5 Protect non-owned vehicular traffic, stored materials, site and structures from damage, theft or vandalism.

3.3 FENCING

3.3.1 Contractor shall use construction fencing at their discretion. Safety fence is required when working within a residential or highly-trafficked commercial area.

3.4 WATER CONTROL

3.4.1 Grade site to drain. Maintain excavations free of water. Provide, operate and maintain pumping equipment. Pumping of water from excavations to be coordinated with PRCS in accordance with State standards.

3.4.2 Protect construction area from puddling or running water.

3.5 PROGRESS CLEANING

3.5.1 Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition at all times.

3.5.2 Remove accumulated waste materials, debris and rubbish from work site daily and from adjoining property and staging area as required, but not less than weekly to be disposed of off-site.

SECTION 3.06 EROSION AND SEDIMENT CONTROL

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

   2.1 The work consists of the construction and maintenance of erosion and sediment control devices, and temporary seeding and mulching.

3. REQUIREMENTS

   3.1 Erosion and sediment control measures will be constructed prior to or as the first step in grading as set forth in the plan narrative. Construction of the devices shall conform to the Virginia Erosion and Sediment Control Handbook and the Loudoun County Codified Ordinance 1220.

   3.2 Limit grading to only those areas involved in current construction activities. Limit length of time of exposure of unprotected graded areas. Permanent stabilization of graded areas shall be done as soon as possible after construction. If permanent stabilization cannot be provided, temporary seeding and mulching shall be provided, at the direction of PRCS Project Manager.

   3.3 For permanent seeding and mulching, see ATHLETIC FIELD TURF, Section 4.12.

4. EROSION AND SEDIMENT CONTROL DEVICES

   4.1 The contractor shall provide for erosion and sediment control as shown on the plans and Erosion and Sediment Control Narrative.

   4.2 The contractor agrees to hold PRCS harmless from any and all liability or damage that may arise out of a violation of the Virginia Erosion and Sediment Control Handbook and agrees to indemnify them against any loss.

SECTION 3.07 CLOSED STORM DRAINAGE SYSTEMS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

1.2 Provisions for closed storm drainage will be in accordance with the Loudoun County Facilities Standards Manual (FSM) in effect at the time of plan approval.

2. SECTION INCLUDES

2.1 Site storm drainage piping, fittings, and accessories, and bedding.

2.2 Catch basins, Paved area drainage, and Site surface drainage.

3. DEFINITIONS

3.1 Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

4. SUBMITTALS

4.1 Submit under provisions of SUBMITTALS, Section 2.04.

4.2 Product Data: Provide data indicating pipe, pipe accessories, and joint material.

4.3 Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

4.4 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

5. PROJECT RECORD DOCUMENTS

5.1 Submit under provisions of PROJECT MANAGEMENT, Section 2.01.

5.2 Accurately record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.

5.3 Contractor shall promptly notify PRCS Project Manager to identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

6. REGULATORY REQUIREMENTS

6.1 Conform to applicable FSM requirements for materials and installation of the Work of this section.

7. FIELD MEASUREMENTS

7.1 Verify that field measurements and elevations are as indicated on approved plans.

8. COORDINATION

8.1 Coordinate work under provisions of PROJECT MANAGEMENT, Section 2.01.

8.2 Coordinate the Work with termination of storm sewer connection outside building, connection to municipal sewer utility service and trenching.

9. PRODUCTS

9.1 STORM PIPE MATERIALS

9.2 PIPE ACCESSORIES

9.2.1 Pipe Joints: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene ribbed gasket for positive seal.

9.2.2 Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

9.2.3 Filter Fabric: Water pervious type, Black polyolefin.

9.2.4 Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Storm Sewer Service" in large letters.

9.3 CATCH BASINS

9.3.1 Lid and Frame: Cast iron construction, with hinged lid:
9.3.1.1 Lid Design: Linear grill.
9.3.1.2 Nominal Lid and Frame Size: TBD. Approval by PRCS Project Manager.

9.3.2 Shaft Construction and Cone Top Section: Reinforced pre-cast concrete pipe sections, lipped male/female joints.

9.3.3 Base Pad: Cast-in-place concrete of type specified in CAST-IN-PLACE CONCRETE, Section 6.05.

9.4 CLEANOUTS

9.4.1 Cleanout Lid and Frame: Cast iron construction, with hinged lid:
9.4.1.1 Lid Design: Linear grill.
9.4.1.2 Nominal Lid and Frame Size: TBD. Approval by PRCS Project Manager.

9.4.2 Shaft Construction and Cone Top Section: Reinforced pre-cast concrete pipe sections, lipped male/female dry joints.

9.4.3 Base Pad: Cast-in-place concrete of type specified in CAST-IN-PLACE CONCRETE, Section 6.05.

9.5 BEDDING MATERIALS

9.5.1 Bedding: Fill Type as specified in EARTHWORK, Section 3.01.

10. EXECUTION

10.1 EXAMINATION

10.1.1 Verify that trench cut or excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.

10.2 PREPARATION

10.2.1 Hand trim excavations to required elevations. Correct over excavation with fine aggregate.

10.2.2 Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

10.3 BEDDING

10.3.1 Excavate pipe trench in accordance with plans. Hand trim excavation for accurate placement of pipe to elevations indicated.

10.3.2 Place bedding material at trench bottom, level materials in continuous layer not exceeding eight (8) inches compacted depth.

10.3.3 Maintain optimum moisture content of bedding material to attain required compaction density.

10.4 INSTALLATION - PIPE

10.4.1 Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal joints watertight.

10.4.2 Place pipe on minimum eight (8) inch deep bed of filter aggregate.

10.4.3 Lay pipe to slope gradients noted on drawings.

10.4.4 Install aggregate at sides and over top of pipe. Provide top cover to minimum compacted thickness of 12 inches, compact to 95.

10.4.5 Do not displace or damage pipe when compacting.

10.4.6 Connect to building, collection, or sump pits, building sewer outlet, municipal storm sewer system, or manholes through installed sleeves.

10.4.7 Install trace wire continuous over top of pipe buried six (6) inches below finish grade, above pipe line.

10.5 INSTALLATION - CATCH BASINS AND CLEANOUTS

10.5.1 Form bottom of excavation clean and smooth to correct elevation.

10.5.2 Form and place cast-in-place concrete base pad, with provision for storm sewer pipe end sections.

10.5.3 Level top surface of base pad to receive concrete shaft sections, sleeved to receive storm sewer pipe sections.

10.5.4 Establish elevations and pipe inverts for inlets and outlets as indicated.

10.5.5 Mount lid and frame level in grout, secured to top cone section to elevation indicated.

10.6 FIELD QUALITY CONTROL

10.6.1 Field inspection and testing as required by FSM.

10.6.2 Request inspection prior to and immediately after placing aggregate cover over pipe.

10.6.3 Compaction testing will be performed in accordance with PRCS requirements.

10.6.4 If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

10.6.5 Pressure Test: Test in accordance with FSM requirements.

10.6.6 Infiltration Test: Test in accordance with FSM requirements.

10.6.7 Deflection Test: Test in accordance with FSM requirements.

10.7 PROTECTION

10.7.1 Protect finished Work.

10.7.2 Protect pipe and aggregate cover from damage or displacement until backfilling operation is completed.

10.8 SCHEDULE

10.8.1 Storm Sewer Main: Size as noted on drawings.

10.8.2 Storm Pipe Branch Lines: Connect catch basins at various site locations with intersection of main storm line. Sizes as noted on drawings.

SECTION 3.08 OPEN DRAINAGE DITCHES AND SWALES

1. GENERAL

1. All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. Provisions for open site drainage will be in accordance with the Loudoun County Facilities Standards Manual (FSM) and the Virginia Erosion and Sediment Control Handbook in effect at the time of plan approval

2. SCOPE

2.1 The work consists of building open drainage ditches and swales according to the plans.

3. SITE DRAINAGE

3.1 Positive drainage must be achieved throughout the site. Stabilization measures for areas of poor drainage shall be coordinated through PRCS project manager responsible for the site and shall take into consideration maintenance programs required for that area.

3.2 Open channels within the active recreation use areas of a site shall conform to the FSM Chapter 5.220.C OPEN DRAINAGEWAYS for open drainageways. Where open channels exist between use areas, pedestrian access shall be clearly delineated by armored walkways or footbridges to minimize damage to the drainageways and reduce the potential for accidents and/or injuries.

3.3 Unless special circumstances or topography prohibits same, culvert outfalls shall be located a minimum of 100 feet from the perimeter of a field playing surface or play apparatus area. When this is not possible, outlet protection shall be provided with alternative materials meeting the required standards for erosion and sediment control. Rip-rap should be avoided, as it poses hazards such as tripping or falling, ponding water, snake refuge, etc. Safety measures such as handrails or fencing may also be required. Specific safety measures shall be coordinated with PRCS project manager for the site and shall be designed based on the anticipated use.

SECTION 3.09 PAVED DITCH

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This section provides guidelines for constructing concrete drainage ditches on PRCS sites per approved plans.

3. MATERIALS

3.1 Concrete shall be Class A as specified in CAST IN PLACE CONCRETE, Section 6.05.

4. CONSTRUCTION

4.1 Sub-grade shall be constructed to the required elevation below the finished surface of the paved ditch in accordance with the dimensions and design as shown on the approved plans.

4.2 All soft and unsuitable materials shall be removed and replaced with an approved material that shall be compacted to 95% density in accordance with ASTM D-698, and graded to a smooth surface.

4.3 All material removed by excavation shall be removed from the site by the Contractor, unless agreed to, and directed by PRCS Project Manager to suitable on-site location.

4.4 The subgrade shall be moistened prior to placing the concrete.

4.5 Form ditches in accordance with the approved plans. All forms shall be inspected before the placing of concrete begins. The finish surface of the paved ditch shall be smooth. No section shall be less than five feet.

4.6 Provide construction joints every ten (10) feet. Provide bituminous expansion material per applicable standards and extend to the full depth of the slab. The expansion joint filler shall conform to Section 212 of the VDOT Specification.

SECTION 3.10 FAIR WEATHER STREAM CROSSING

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of the layout and construction of the concrete fair weather stream crossings including related clearing excavation, grading, stream diversion (where necessary), form work, pouring, finishing and stabilization to construct in place a finished structure as shown on the drawings.

3. REQUIREMENTS

3.1 The Fair Weather Stream Crossing shall be done in accordance with federal, state and local regulations.

SECTION 3.11 SUBSURFACE DRAINAGE

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the subsurface drainage system.

2.2 The Contractor will make adjustments as directed, or required by field conditions to provide a properly functioning installation at all times.

3. MATERIALS

3.1 Geosynthetic Filter Fabric will be non-woven fabric such as Mirafi 140s, or approved equal.

3.2 Aggregate will be VDOT No. 57 aggregate.

3.3 Drain Pipe will be perforated, corrugated, polyethylene plastic pipe, six (6) inches in diameter.

4. CONSTRUCTION

4.1 Trench excavation will be of necessary depth for proper installation of the drain. The bottom of the trenches will be graded on a continuous grade with no reverse grades or low spots. No greater length of trench will be left open, in advance of the completed structure placed therein, than can be completed in that day's operation. The Contractor will remove all encountered material of every description prior to drain installation.

4.1.1 Drain

4.1.1.1 Drain Installation - The filter fabric will be of sufficient width to completely envelope the aggregate as shown on the plans, and will be placed in the bottom of the trench. The coarse aggregate will be placed on the filter fabric to the depth and width shown on the plans. The filter fabric will be wrapped around the aggregate and will overlap 12 inches over the top of the aggregate.

4.1.1.2 Backfill material will be placed in the trench and brought to grade as delineated on the plan.

4.1.1.3 Outlet - The drain will be daylighted into an adequate drainage area as shown in the drawings.

Athletic Fields

SECTION 4.01 SKINNED INFIELD

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes the provision of all material, services, labor, and equipment necessary for and incidental to executing and completing the construction of skinned infields.

2.2 The term skinned infield refers to those areas in which turf have not been specified and includes base paths, pitcher's mounds, and batter's boxes on totally skinned infields as well as fields with turf infields.

3. MATERIALS

3.1 Infield mix shall be as provided by Luck Stone Corporation of Charlottesville, VA 22903, 804-295-3611. Infield mix supplied shall be "Fielders Choice Ballfield Mix" as specified in Fairfax County Contract Number: BL0149864311A or equal.

3.2 A representative sample shall be submitted for physical analysis and approval by PRCS before transportation to the site.

3.3 Mix delivered to the site that does not conform to the approved sample as specified will be rejected. The Contractor shall be required to remove it and replace the material with the specified mix at their expense.

4. CONSTRUCTION

4.1 Stripping and Grading

4.1.1 Strip the area to be skinned, as indicated on the plans. All soil, sod, roots, etc. shall be removed to a depth of six (6) inches below finished grade.

4.1.2 Excavated material shall be removed from the site by the Contractor.

4.1.3 The subgrade shall conform to all grades and contours of the finished grade with a depth of six (6) inches.

4.1.4 The subgrade shall be approved by PRCS before placement of the infield mix.

5. INFIELD SOIL MIX

5.1 Place a six (6) inch layer of the infield mix over the approved subgrade.

5.2 Uniformly fine grade the infield mix to the grade and contours specified on the plan.

5.3 Properly shape the pitcher's mound using the approved material.

5.4 Blend the infield mix grade with the grade at the juncture of the turf areas so there is no difference in elevation between the two surfaces.

5.5 Edge all turf at the juncture of the skinned infields in straight lines, or contours as required for the pitcher's mound, batter's boxes, base paths, and perimeter of the infield.

SECTION 4.02 BASKETBALL COURT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Subgrade.

2.1.2 Aggregate subbase and base

2.1.3 Asphaltic concrete leveling and surface course.

2.1.4 Ashphalt resurfacer, filler coat and colored surfacing.

2.1.5 Basketball backboards and goals.

3. RELATED SECTIONS

3.1 ROUGH AND FINE GRADING, Section 3.02.

4. PRODUCTS

4.1 MATERIALS

4.1.1 Subbase course: VDOT No. 57 aggregate.

4.1.2 Base course: VDOT Type 21A material.

4.1.3 Asphalt Resurfacer: Plush-Tex manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal.

4.1.4 Filler coat: Acrylic Filler Coat Binder Color manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal.

4.1.5 Color coat: Deco Color Multi-Purpose Coating manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal. Light green in the central play area and red outside. Colors shall be approved by PRCS.

4.1.6 Fine aggregate for filler coat and color coat: Silica sand, 100% passing a No. 80 sieve.

4.2 ACCESSORIES

4.2.1 Filter fabric: Non-woven fabric such as Mirafi 140s, or approved equal.

4.2.2 Primer: VDOT low viscosity asphalt MC-30 or MC-70.

4.2.3 Fine Aggregate: VDOT Grade C material. This material is used only for blotting excess primer.

4.2.4 Line paint: Novatex manufactured by Nova Sports USA or equal.

4.3 EQUIPMENT

4.3.1 Basketball Backboard, Post and Goal: Model No. #541-637 as manufactured by PCA Industries Inc., 5642 Natural Bridge, St. Louis MO 63120, telephone number (800) 727-8180, or approved equal.

4.4 ASPHALT PAVING MIX

4.4.1 Leveling / Intermediate Course: VDOT Type SM-2A or equal.

4.4.2 Surface Course: VDOT Type SM-1.

5. CONSTRUCTION

5.1 The Contractor shall stake the corners of the court for approval by PRCS prior to construction of the court.

5.2 Areas to be paved shall be cleared of all roots, sod, mulch and other debris not part of the soil, to a depth of at least one (1) foot below finished subgrade.

5.3 Subgrade Preparation

5.3.1 Subgrade shall be constructed in accordance with VDOT Section 305 and the ROUGH AND FINE GRADING, Section 3.02.

5.3.2 The Contractor shall notify PRCS if the subgrade is found to be unsuitable for adequate leveling and compaction due to moisture content or other conditions.

5.3.3 Existing subgrade material which will not readily compact as required shall be removed and replaced with satisfactory material. Additional material needed to bring subgrade to required line and grade and to replace unsuitable material removed shall conform to this section.

5.3.4 Excavation required in the subgrade shall be completed before fine grading and compaction are performed. When excavation must be performed in completed subgrade, subsequent backfill and compaction shall be performed as directed by PRCS. Completed subgrade, after filling and compaction, shall be uniformly and properly graded and have a uniform, stable density.

5.3.5 Materials shall not be stored or stockpiled on prepared subgrade.

5.3.6 Disposal of debris and other material excavated or stripped under this section, and material unsuitable for or in excess of requirements for completing work of this section shall be disposed of off-site by the Contractor.

5.3.7 The subgrade, subbase, and base course shall be kept clean and uncontaminated. Less select material shall not be permitted to become mixed with aggregate. Material spilled outside pavement lines shall be removed and the area repaired.

5.3.8 Graded and compacted subgrade shall be approved by PRCS before placement and preparation of the aggregate subbase course.

5.4 Aggregate Subbase Course

5.4.1 Construction of the subbase course shall conform to VDOT Section 309.

5.4.2 The aggregate subbase course shall not be placed on muddy or frozen subgrade.

5.4.3 The compacted aggregate subbase course shall be a minimum of six (6) inches.

5.4.4 Aggregate shall be applied in lifts less than or equal to six (6) inches thick, compacted measure. Each lift shall be separately compacted to the specified density.

5.4.5 Rolling shall begin on the low side and progress toward the high side of the court cross section. Rolling shall continue until material does not creep or wave ahead of roller wheels.

5.5 Aggregate Base Course

5.5.1 Construction of the aggregate base course shall conform to VDOT Section 309.

5.5.2 The compacted aggregate base course shall be a minimum of four (4) inches.

5.5.3 Rolling shall begin on the low side and progress toward the high side of the court cross section. Rolling shall continue until material does not creep or wave ahead of roller wheels.

5.5.4 Surface irregularities which exceed ½ inch as measured by means of a 10-foot long straightedge shall be replaced and properly compacted.

5.5.5 Graded and compacted aggregate base course shall be approved by PRCS before placement of the asphalt surface course.

5.5.6 Primer shall be sprayed with a pressure distributor, under average conditions from 0.20 to 0.50 gallon per square yard on the prepared aggregate base course. The asphalt shall be entirely absorbed by the base course. If it is not absorbed within 24 hours after application, sand shall be spread over the surface to blot the excess asphalt. Care shall be taken to prevent over priming. The prime shall be fully set and cured before placing the surface treatment.

5.5.7 Basketball post footings shall be installed prior to construction of the asphalt concrete courses.

5.6 Asphalt Course

5.6.1 Construction of the asphalt concrete courses shall comply with VDOT Section 320.

5.6.2 During construction the Contractor shall submit test results on the aggregate gradation and binder content of the mixes (minimum of two (2) tests). These tests may be made by either the material supplier or an independent laboratory. Costs incurred as a result of any of the above tests will be borne by the Contractor.

5.6.3 The leveling course shall be uniformly spread and compacted to a minimum depth of 1½ inches.

5.6.4 The surface course shall be laid at right angles to the leveling course.

5.6.5 The surface course shall be uniformly spread and compacted to a depth of 1½ inches.

5.6.6 Deliveries shall be timed to permit spreading and rolling all material during daylight hours, unless artificial light, satisfactory to PRCS is provided. Loads which have become wet shall not be accepted. Hauling over freshly laid or rolled material shall not be permitted.

5.6.7 Portions of pavement courses which become mixed with foreign material or are in any way defective shall be removed, replaced, replaced with fresh mixture, and compacted to density of surrounding areas. Asphalt concrete spilled outside the lines of finished pavement shall be immediately and completely removed. Such material shall not be employed in the work.

5.6.8 Joints shall present the same texture, density, and smoothness as other sections of the course. A continuous bond shall be obtained between successive placement of new pavement. New material at joints shall be thick enough to allow for compaction when rolling. Compaction of pavement, base, and subgrade at joints shall be such that there is no yielding of new pavement relative to existing pavement when subjected to traffic.

5.6.9 Variations in smoothness of the finished surface shall be less than or equal to 1/4 inch when tested with a 10-foot straightedge, measured in any direction. Irregularities exceeding these amounts or which retain water on the surface shall be corrected by removing defective work and replacing it with new material conforming to this section.

5.6.10 The finished surface course shall not vary from the specified grade more than 1/8 inch in ten (10) feet when measured in any direction.

5.7 Color Surface System

5.7.1 All resurfacer, filler coat, and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

5.7.2 Surface Preparation - All surfaces shall be thoroughly cleaned, removing all loose dirt, dust, oil grease, leaves and other debris.

5.7.3 Asphalt Resurfacer

5.7.3.1 The court shall be checked with a ten foot straight-edge or shall be flooded with water to locate low areas which are more than 1/8" deep.

5.7.3.2 Minor depressions, 1/8" - 1/4" deep shall be leveled by troweling a layer of undiluted asphalt resurfacer over the low area.

5.7.3.3 Depressions between 1/4" and 1/2" deep require multiple layers of asphalt resurfacer.

5.7.3.4 Depressions exceeding 1/2" shall be filled with VDOT SM-1 bituminous concrete. All rough paving joints and roller marks shall be leveled prior to application of the asphalt resurfacer.

5.7.3.5 Apply one coat of resurfacer over the entire court, after filling all depressions. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.4 Acrylic Filler Coat Binder

5.7.4.1 Apply one coat of filler coat binder over the asphalt resurfacer. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.4.2 Surface Preparation - The surface of the filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

5.7.5 Deco Color Mult-Purpose Coating

5.7.5.1 Apply one (1) texture course of color coat over the filler coat. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.5.2 Apply one (1) finish course of color coat over the texture course. Mix design, application rates and procedures shall be according to the manufacturer.

5.8 Playing Lines

5.8.1 Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two-inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft soled shoes and knee pads or kneel on boards to prevent surface indentation. Ragged lines shall not be acceptable.

6. TRAFFIC

Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.03 MULTI-USE COURT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Subgrade.

2.1.2 Aggregate subbase and base.

2.1.3 Asphalt concrete leveling and surface course.

2.1.4 Asphalt resurfacer, filler coat and colored surfacing.

2.1.5 Basketball backboards and goals.

2.1.6 Volleyball net post sleeves.

3. RELATED SECTIONS

3.1 ROUGH AND FINE GRADING, Section 3.02.

4. PRODUCTS

4.1 MATERIALS

4.1.1 Sub-base course: VDOT No. 57 aggregate.

4.1.2 Base course: VDOT Type I grade 21A material.

4.1.3 Asphalt Resurfacer: Plush-Tex manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal.

4.1.4 Filler coat: Acrylic Filler Coat Binder Color manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal.

4.1.5 Color coat: Deco Color Multi-Purpose Coating manufactured by KOCH Materials Company, 1050 State St., Perth Amboy, NJ 08861, or approved equal. Light green in the central play area and red outside. Colors shall be approved by PRCS.

4.1.6 Fine aggregate for filler coat and color coat: Silica sand, 100% passing a No. 80 sieve.

4.2 ACCESSORIES

4.2.1 Filter fabric: Typar 3401, Mirafi 140s or approved equal.

4.2.2 Primer: VDOT low viscosity asphalt MC-30 or MC-70.

4.2.3 Fine Aggregate: VDOT Grade C material. This material is used only for blotting excess primer.

4.2.4 Line paint: Novatex manufactured by Nova Sports USA or equal.

4.3 EQUIPMENT

4.3.1 Basketball Backboard, Post and Goal: Model No. #541-637 as manufactured by PCA Industries Inc., 5642 Natural Bridge, St. Louis MO 63120, telephone number (800) 727-8180, or approved equal.

4.3.2 Volleyball Net Post Ground Sockets: Model #138 as manufactured by Gametime, P.O. Box 121, Ft. Payne, AL 35967, telephone number (800) 235-2440 or equal.

4.4 ASPHALT PAVING MIX

4.4.1 Leveling Course: VDOT Type SM-2A.

4.4.2 Surface Course: VDOT Type SM-1.

5. CONSTRUCTION

5.1 Before construction of the court, the Contractor shall stake the corners of the court for approval by PRCS.

5.2 Clearing

5.2.1 Areas to be paved shall be cleared of all roots, sod, mulch and other debris not part of the soil, to a depth of at least one-foot below finished subgrade.

5.3 Subgrade Preparation

5.3.1 Subgrade shall be constructed in accordance with VDOT Section 305 and the ROUGH AND FINE GRADING, Section 3.02.

5.3.2 The Contractor shall notify PRCS if the subgrade is found to be unsuitable for adequate leveling and compaction due to moisture content or other conditions.

5.3.3 Existing subgrade material that will not readily compact as required shall be removed and replaced with satisfactory material. Additional material needed to bring subgrade to required line and grade and to replace unsuitable material removed shall conform to this section.

5.3.4 Excavation required in the subgrade shall be completed before fine grading and compaction are performed. When excavation must be performed in completed subgrade, subsequent backfill and compaction shall be performed as directed by PRCS. Completed subgrade, after filling and compaction, shall be uniformly and properly graded and have a uniform, stable density.

5.3.5 Materials shall not be stored or stockpiled on prepared subgrade.

5.3.6 Disposal of debris and other excavated or stripped material and unsuitable or excess material shall be disposed of off-site by the Contractor.

5.3.7 The subgrade, subbase, and base course shall be kept clean and uncontaminated. Less select material shall not be permitted to become mixed with aggregate. Material spilled outside pavement lines shall be removed and the area repaired.

5.3.8 Graded and compacted subgrade shall be approved by PRCS before placement and preparation of the aggregate subbase course.

5.4 Aggregate Subbase Course

5.4.1 Construction of the subbase course shall conform to VDOT Section 309.

5.4.2 The aggregate subbase course shall not be placed on muddy, or frozen subgrade.

5.4.3 The compacted aggregate subbase course shall be a minimum of six (6) inches.

5.4.4 Aggregate shall be applied in lifts less than or equal to six (6) inches thick, compacted measure. Each lift shall be separately compacted to the specified density.

5.4.5 Rolling shall begin on the low side and progress toward the high side of the court cross section. Rolling shall continue until material does not creep or wave ahead of roller wheels.

5.5 Aggregate Base Course

5.5.1 Construction of the aggregate base course shall conform to VDOT Section 309.

5.5.2 The compacted aggregate base course shall be a minimum of four (4) inches.

5.5.3 Rolling shall begin on the low side and progress toward the high side of the court cross section. Rolling shall continue until material does not creep or wave ahead of roller wheels.

5.5.4 Surface irregularities that exceed 1/2 inch as measured by means of a 10-foot long straightedge, shall be replaced and properly compacted.

5.5.5 Graded and compacted aggregate base course shall be approved by PRCS before placement of the asphalt surface course.

5.5.6 Primer shall be sprayed with a pressure distributor, under average conditions from 0.20 to 0.50 gallon per square yard on the prepared aggregate base course. The asphalt shall be entirely absorbed by the base course. If it is not absorbed within 24 hours after application, sand shall be spread over the surface to blot the excess asphalt. Care shall be taken to prevent over priming. The prime shall be fully set and cured before placing the surface treatment.

5.5.7 Basketball post footings and volleyball net post ground socket footings shall be installed prior to construction of the asphalt concrete courses.

5.6 Asphalt Course

5.6.1 Construction of the asphalt concrete courses shall comply with VDOT Section 320.

5.6.2 During construction the Contractor shall submit test results on the aggregate gradation and binder content of the mixes (minimum of two (2) tests). Either the material supplier or an independent laboratory may make these tests. Costs incurred as a result of any of the above tests will be borne by the Contractor.

5.6.3 The leveling course shall be uniformly spread and compacted to a minimum depth of 1 1/2 inches.

5.6.4 The surface course shall be laid at right angles to the leveling course.

5.6.5 The surface course shall be uniformly spread and compacted to a depth of 1 1/2 inches.

5.6.6 Deliveries shall be timed to permit spreading and rolling all material during daylight hours, unless artificial light, satisfactory to PRCS is provided. Loads that have become wet shall not be accepted. Hauling over freshly laid or rolled material shall not be permitted.

5.6.7 Portions of pavement courses that become mixed with foreign material or are in any way defective shall be removed, replaced, replaced with fresh mixture, and compacted to density of surrounding areas. Asphalt concrete spilled outside the lines of finished pavement shall be immediately and completely removed. Such material shall not be employed in the work.

5.6.8 Joints shall present the same texture, density, and smoothness as other sections of the course. A continuous bond shall be obtained between successive placement of new pavement. New material at joints shall be thick enough to allow for compaction when rolling. Compaction of pavement, base, and sub-grade at joints shall be such that there is no yielding of new pavement relative to existing pavement when subjected to traffic.

5.6.9 Variations in smoothness of the finished surface shall be less than or equal to 1/4 inch when tested with a 10-foot straightedge, measured in any direction. Irregularities exceeding these amounts or which retain water on the surface shall be corrected by removing defective work and replacing it with new material conforming to this section.

5.6.10 The finished surface course shall not vary from the specified grade more than 1/8 inch in ten (10) feet when measured in any direction.

5.7 Color Surface System

5.7.1 All resurfacer, filler coat, and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

5.7.2 Surface Preparation - All surfaces shall be thoroughly cleaned, removing all loose dirt, dust, oil grease, leaves and other debris.

5.7.3 Asphalt Resurfacer

5.7.3.1 The court shall be checked with a 10-foot straightedge or shall be flooded with water to locate low areas that are more than 1/8" deep.

5.7.3.2 Minor depressions, 1/8" - 1/4" deep shall be leveled by troweling a layer of undiluted asphalt resurfacer over the low area.

5.7.3.3 Depressions between 1/4" and 1/2" deep require multiple layers of asphalt resurfacer.

5.7.3.4 Depressions exceeding 1/2" shall be filled with VDOT SM-1 bituminous concrete. All rough paving joints and roller marks shall be leveled prior to application of the asphalt resurfacer.

5.7.3.5 Apply one (1) coat of resurfacer over the entire court, after filling all depressions. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.4 Acrylic Filler Coat Binder

5.7.4.1 Apply one coat of filler coat binder over the asphalt resurfacer. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.4.2 Surface Preparation - The surface of the filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

5.7.5 Deco Color Multi Purpose Coating

5.7.5.1 Apply one (1) texture course of color coat over the filler coat. Mix design, application rates and procedures shall be according to the manufacturer.

5.7.5.2 Apply one (1) finish course of color coat over the texture course. Mix design, application rates and procedures shall be according to the manufacturer.

5.8 Playing Lines

5.8.1 Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft-soled shoes and kneepads or kneel on boards to prevent surface indentation. Ragged lines shall not be acceptable.

6. TRAFFIC

6.1 Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.04 MULTI-USE COURT - FULL DEPTH ASPHALT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Preparation of the sub-grade and base course.
2.1.2 Leveling course.
2.1.3 Filler and color coats.
2.1.4 Line markings.
2.1.5 Basketball backboards and goals.
2.1.6 Volleyball net post sleeves.

3. RELATED SECTIONS

3.1 ROUGH AND FINE GRADING, Section 3.02.

4. MATERIALS

4.1 Base Course shall be VDOT No. 57 coarse aggregate.

4.2 Leveling Course shall be VDOT SM-2A asphalt concrete.

4.3 Surface Course shall be VDOT SM-1 asphalt concrete.

4.4 Filler coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

4.5 Color coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

4.6 Fine aggregate for filler coat and color coat shall be silica sand, 100% passing a No. 80 sieve.

4.7 Color coat shall be light green in the central play area and red outside. PRCS shall approve colors.

4.8 Line paint shall be Latex-ite Line Paint as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

4.9 Basketball Backstop - Shall be a 10' tandem support backstop with a 7'-0" extension. Main post and extension shall be 4-1/2" O.D. galvanized steel pipe. Stabilizing support post shall be 3-1/2" O.D. galvanized steel pipe. Backboard shall be fan shaped cast aluminum (lifetime guarantee) with double strength "Super Goal" and a steel chain net. See PCA Industries Inc. Model No. #541-637 as distributed by Educational Media, Inc., 3191 Westover Drive, S.E., Washington, DC 20020, Telephone No. (202) 583-9594, or approved equal.

4.10 Mounting height of the "Super Goal" on the full court shall be ten feet.

4.11 Mounting height of the "Super Goal" on the half court shall be 8 feet.

4.12 Volleyball Net Post Sleeves - Shall be 2-7/8" O.D. galvanized steel pipe approximately 2' long, threaded to accept screw-in caps that shall be included. See Gametime #138 as distributed by Cunningham Associates, Inc., Charlotte, NC 28224, 800-438-2780.

4.13 Concrete shall be class B. See the CAST IN PLACE CONCRETE section contained herein.

5. CONSTRUCTION

5.1 Clearing

5.1.1 Areas to be paved shall be cleared of all roots, sod, mulch and other debris, not part of the soil, to a depth of at least one (1) foot below finished grade.

5.2 Subgrade Preparation

5.2.1 Subgrade shall be prepared with proper fill, if required, having a stable, hard, compacted, uniform density throughout its entire length, width and depth. The sub-grade area shall be compacted sufficiently to support the asphalt paver without causing deformation to the sub-grade.

5.2.2 Subgrade shall be constructed in accordance with VDOT Section 305 and ROUGH AND FINE GRADING, Section 3.02.

5.2.3 The Contractor shall notify PRCS if the subgrade is found to be unsuitable for adequate leveling and compaction due to moisture content, or other conditions.

5.2.4 Existing subgrade material that will not readily compact as required shall be removed and replaced with satisfactory material. Additional material needed to bring subgrade to required line and grade and to replace unsuitable material removed shall conform to this section.

5.2.5 Excavation required in the subgrade shall be completed before fine grading and compaction are performed. When excavation must be performed in completed sub-grade, subsequent backfill and compaction shall be performed as directed by PRCS. Completed subgrade, after filling and compaction, shall be uniformly and properly graded and have a uniform stable density.

5.2.6 Material shall not be stored or stockpiled on prepared subgrade.

5.2.7 Disposal of debris and other material excavated or stripped under this section, and material unsuitable for or in excess of requirements for completing work, shall be disposed of off-site by the Contractor.

5.2.8 The subgrade and base course shall be kept clean and uncontaminated. Less select material shall not be permitted to become mixed with aggregate. Material spilled outside pavement lines shall be removed and the area repaired.

5.2.9 Graded and compacted subgrade shall be approved by PRCS before placement and preparation of the aggregate base course.

5.3 Aggregate Base Course

5.3.1 Construction of the aggregate base course shall conform to VDOT Section 309.

5.3.2 The compacted aggregate base course shall be a minimum of four (4) inches.

5.3.3 Base course material that will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring base course to required line and grade and to replace unsuitable material removed shall conform to this section.

5.3.4 Rolling shall begin on the low side and progress toward the high side of the court cross section. Rolling shall continue until material does not creep or wave ahead of roller wheels.

5.3.5 Surface irregularities that exceed 1/2 inch as measured by means of a 10-foot long straightedge shall be replaced and properly compacted.

5.3.6 The graded and compacted aggregate base course shall be approved by PRCS before placement of the asphalt surface course.

5.3.7 Basketball posts and footings and volleyball net post sleeves shall be installed prior to construction of the leveling and surface courses.

5.4 Asphalt Court

5.4.1 Samples of aggregate to be used on the project shall be submitted, together with a report of aggregate gradation and recommended binder content, one week prior to beginning construction.

5.4.2 During construction the Contractor shall submit test results of the aggregate gradation and binder content of the mixes (minimum of two (2) tests). Either the material supplier or an independent laboratory may make these tests. The Contractor shall incur any costs as a result of any of the above tests.

5.4.3 Deliveries shall be timed to permit spreading and rolling all material during daylight hours, unless artificial light, satisfactory to PRCS is provided. Loads that have become wet shall not be accepted. Hauling over freshly laid or rolled material will not be permitted.

5.4.4 Portions of pavement courses which become mixed with foreign material, or are in any way defective, shall be removed, or replaced, with fresh mixture and compacted to the density of surrounding areas. Asphalt concrete spilled outside the lines of finished pavement shall be immediately and completely removed. Such material shall not be employed in the work.

5.4.5 Joints shall present the same texture, density, and smoothness as other sections of the course. A continuous bond shall be obtained between successive placement of new pavement. New material at joints shall be thick enough to allow for compaction when rolling. Compaction of pavement, base, and sub-grade at joints shall be such that there is no yielding of new pavement relative to existing pavement when subjected to traffic.

5.4.6 Variations in smoothness of the finished surface shall be less than or equal to 1/4 inch when tested with a 10-foot straightedge, measured in any direction. Irregularities exceeding these amounts or which retain water on the surface shall be corrected by removing defective work and replacing it with new material conforming to this section.

5.4.7 Leveling Course shall be thoroughly compacted to a depth of three (3) inches. The finished surface shall not vary from the specified grade more than 1/4 inch in ten (10) feet when measured in any direction.

5.4.8 Surface Course shall be thoroughly compacted to a depth of 1 1/2 inches with a maximum of 3% air voids. The finished surface shall not vary from the specified grade more than 1/8 inch in ten feet when measured in any direction.

5.4.9 Field density determination will be performed with the nuclear field density device utilizing the density control strip as specified under VDOT Section 304 and Virginia Test Method - 10 (VTM-10).

5.4.10 All filler coat and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

5.4.11 Filler coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

5.4.11.1	Latex-ite	55 gal.
5.4.11.2	80 Mesh Sand	400 lbs.
5.4.11.3	Water	24 gal.

5.4.12 Surface Preparation - The surface shall be thoroughly cleaned, removing all loose dirt, dust, oil, grease, leaves, and other debris. The court shall be checked with a ten-foot straightedge or shall be flooded with water to locate low areas that are more than 1/8" deep. Minor depressions, 1/8" - 1/4" deep shall be leveled by troweling or screeding a layer of patch mix over the low area. Suitable patch mix is Latex-ite filler coat that has not been diluted with water. All rough paving joints and roller marks shall be leveled prior to application of the filler coat.

5.4.13 Method of Application - Latex-ite shall not be stored in direct sunlight or allowed to freeze. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The first filler coat shall be applied perpendicular to the playing net. The entire surface shall be checked for ridges between the first and second filler coat applications, and following the second application. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris. The second filler coat shall be applied parallel to the playing net. Uniformly apply the filler coat with a 24" to 48" wide flexible rubber squeegee. No irregularities of texture or level are to be left for correction by color coat application.

5.4.14 Coverage - Each filler coat shall be applied at a rate of .05 gal. per square yard. Allow two hours of dehydrating time between each application.

5.4.15 Color coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

5.4.15.1	Latex-ite	55 gal.
5.4.15.2	Water	24 gal.

5.4.16 Surface Preparation - The surface of the second application of filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

5.4.17 Method of Application - Color coat shall be applied with a 24" - 48" wide flexible squeegee. The color coat shall be applied parallel to the playing net. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The color coat surface shall not be scraped to remove imperfections.

5.5 Playing Lines

Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft-soled shoes and kneepads or kneel on boards to prevent surface indentation. Ragged lines will not be acceptable.

5.6 Traffic

Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.05 TENNIS COURTS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Preparation of the sub-grade and base course.

2.1.2 Fence enclosure.

2.1.3 Leveling course.

2.1.4 Filler and color coats.

2.1.5 Line markings.

3. MATERIALS

3.1 Net Posts, Nets, and Fixtures

3.1.1 Net Posts shall be the Premier tennis post as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis post shall be 11-gauge steel, 3" OD with an internal wind gear. The handle and faceplate shall be chrome plated. The handle shall be removable. The post shall be finished with a forest green acrylic urethane.

3.1.2 Net Post sleeves shall be the Premier model GS-24 as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis post sleeve shall fit 3" OD net posts. PVC cap shall be included.

3.1.3 Net shall be model TN-60 tennis net as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis net shall be 3.0 mm braided black polyethylene, 1 3/4" square mesh design with 285 lb. break strength. The top six rows shall be double mesh. The headband shall be vinyl coated steel, double thickness 6.0-mm cable with 3300 lb. break strength. The net shall have reinforced black vinyl bottom and side pockets with fiberglass dowels.

3.1.4 Adjustable center strap shall be model ACS as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal.

3.1.5 Pipe anchor for the center strap tie down shall be the ANCHOR as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal.

3.1.6 Concrete shall be class B. See CAST-IN-PLACE CONCRETE, Section 6.05.

3.2 Fence Enclosure

3.2.1 Materials - The fence shall be ten (10) feet high and the materials shall be as follows:

3.2.1.1 Line posts - 2 1/2" O.D. standard weight, galvanized pipe, 3.65 lbs./ft.

3.2.1.2 Corner and gateposts - 3" O.D. standard weight, galvanized pipe, 5.79 lbs./ft.

3.2.1.3 Top rail - 1 5/8" O.D. standard weight, galvanized pipe 2.27 lbs./ft.

3.2.1.4 Corner and gate horizontal braces - 1 5/8" O.D. standard weight, galvanized pipe 2.27 lbs./ft.

3.2.1.5 Chain link fabric - #9 gage, 1 3/4" mesh, knuckled finish, top and bottom. Base shall be commercial quality hot dipped galvanized steel wire.

3.2.1.6 Bottom wire - #7 coil spring wire.

3.2.1.7 Corner and gate post tops - Malleable iron or aluminum sand castings.

3.2.1.8 Fabric ties - Aluminum or galvanized wire of approved gage and design.

3.2.1.9 Gate frames - 1 5/8" O.D. standard weight, galvanized pipe.

3.2.1.10 Internal bracing - 1 3/8" O.D. standard weight, galvanized pipe.

3.2.1.11 Miscellaneous fittings shall be those which are necessary to make a complete installation. All fence materials shall be hot-dipped galvanized inside and out.

3.2.1.12 All components listed under the fence enclosure section above shall be coated with thermally bonded vinyl coating as specified in the GENERAL FENCING AND GATES section of these specifications.

3.2.2 Concrete shall be class B. See CAST-IN-PLACE CONCRETE, Section 6.05.

3.3 Court Pavement

3.3.1 Primer shall be MC-30 or MC-70 low viscosity asphalt conforming to VDOT Section 211.

3.3.2 Base Course shall be VDOT Type I, 21A, crushed stone.

3.3.3 Leveling Course shall be VDOT SM-2A asphalt concrete.

3.3.4 Surface Course shall be VDOT SM-1 asphalt concrete.

3.3.5 Samples of aggregate to be used in connection with the project will be submitted together with a report of aggregate gradation and recommended binder content one week prior to beginning construction.

3.3.6 Filler coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.3.7 Color coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.3.8 Fine aggregate for filler coat and color coat shall be silica sand, 100% passing a No. 80 sieve.

3.3.9 Color coat shall be light green in the central play area and red outside.

3.3.10 Line paint shall be Latex-ite Line Paint as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

4. CONSTRUCTION

4.1 Preparation of Subgrade

4.1.1 Subgrade - All roots, sod, mulch, foreign matter, etc. shall be removed to a depth of at least 12 inches below finished grade. It shall then be prepared with proper fill, if needed, having a stable, hard, and compacted, uniform density throughout its entire length, width and depth. The subgrade area shall be compacted sufficiently to support the asphalt paver without causing deformation to the subgrade. If deformation does occur, the Contractor shall place and roll VDOT No. 57 coarse aggregate into the subgrade until it supports the asphalt paver without deformation. PRCS prior to construction of the leveling course shall approve the subgrade.

4.2 Net Posts, Nets, and Fixtures

4.2.1 All net posts and footings shall be installed before installation of the court base, leveling and surface courses.

4.2.2 A 10" long 1/2" diameter steel rod shall be placed through the net post, 10" above the bottom. It shall protrude evenly on both sides and be welded.

4.2.3 Set net post sleeves and net anchor posts for each court in concrete. The hole for net post concrete footings shall be of the dimensions shown on the contract drawing. The hole for net anchor posts shall be 12" deep and 12" in diameter or square.

4.2.4 The top of all net post and net anchor post concrete footings shall be level with the surface of the subgrade and shall not project into the base course or asphalt leveling course.

4.2.5 The net shall not be installed until the Contractor has received approval of the installation of the color coat surface from PRCS.

4.3 Fence Enclosure

4.3.1 All posts and footings shall be installed before installation of the court base, leveling, and surface courses.

4.3.2 The fence fabric shall be installed before the installation of the color coat surface.

4.3.3 Line posts shall be set approximately 3'-0" below finished ground level. They shall be spaced in the line of fence at a maximum of 10'-0" apart.

4.3.4 Corner and gateposts shall be set approximately 3'-0" below finished ground level. (Note: line, corner, and gate posts shall be set in cylindrical concrete foundations. The hole for the concrete footings shall be 6" deeper than the bottom of the posts and a minimum of 12" in diameter).

4.3.5 Top rail shall be furnished in random lengths averaging not less than 20' and joined with extra long pressed steel sleeves providing a rigid connection but allowing for expansion and contraction.

4.3.6 All corner and gate posts shall be braced by a horizontal pipe securely attached to corner and first line posts with malleable iron or aluminum sand cast fittings, leveled edge bands and truss braced with 3/8" rod and take up.

4.3.7 The fabric shall be placed on the courtside. It shall be fastened to line posts at approximately 24" intervals. The bottom reinforcing wire shall be securely clipped to the fabric at a maximum of 18" intervals.

4.3.8 The bottom of the fabric shall be 1" above the finished surface.

4.3.9 Location of the fence shall be as shown on the plan. The 3'-0" gate openings shall be as shown on the plan.

4.4 Asphalt Court

4.4.1 Samples of aggregate to be used in connection with the project shall be submitted together with a report of aggregate gradation and recommended binder content one week prior to beginning construction.

4.4.2 During construction the Contractor shall submit test results of the aggregate gradation and binder content of the mixes (minimum of two (2) tests). Either the material supplier or an independent laboratory may make these tests. Costs incurred as a result of any of the above tests will be borne by the Contractor.

4.4.3 The leveling course shall be thoroughly compacted to a depth of 2 inches with a maximum of 3% air voids. The finished surface shall not vary from the specified grade more than 1/4 inch in ten (10) feet when measured in any direction.

4.4.4 The surface course shall be thoroughly compacted to a depth of 1 1/2 inches. The finished surface shall not vary from the specified grade more than 1/8 inch in ten (10) feet when measured in any direction.

4.4.5 Field density determination will be performed with the nuclear field density device utilizing the density control strip as specified under VDOT Section 304 and Virginia Test Method - 10 (VTM-10).

4.4.6 The compacted bituminous concrete shall be saw-cut to a depth of four (4) inches as shown on the plan and detail, and filled with the joint filler specified.

4.4.7 All filler coat and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

4.4.8 Filler coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.8.1	Latex-ite	55 gal.
4.4.8.2	80 Mesh Sand	400 lbs.
4.4.8.3	Water	24 gal.

4.4.9 Surface Preparation - The surface shall be thoroughly cleaned, removing all loose dirt, dust, oil grease, leaves and other debris. The court shall be checked with a ten-foot straightedge or shall be flooded with water to locate low areas that are more than 1/8" deep. Trowel or screed a layer of patch mix over minor depressions, 1/8” - 1/4” deep. Suitable patch mix is Latex-ite filler coat that has not been diluted with water. Depressions 1/4" to 1/2" deep require multiple layers of patch mix. Depressions exceeding 1/2" shall be filled with VDOT SM-1 asphalt concrete. All rough paving joints and roller marks shall be leveled prior to application of the filler coat.

4.4.10 Method of Application - Latex-ite shall not be stored in direct sunlight, or allowed to freeze. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The first filler coat shall be applied perpendicular to the playing net. The entire surface shall be checked for ridges between the first and second filler coat applications, and following the second application. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris. The second filler coat shall be applied parallel to the playing net.

Uniformly apply the filler coat with a 24" to 48" wide flexible rubber squeegee. No irregularities of texture or level are to be left for correction by color coat application.

4.4.11 Coverage - Each filler coat shall be applied at a rate of .05 gal. per square yard. Allow two (2) hours of dehydrating time between each application.

4.4.12 Color coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.12.1	Latex-ite	55 gal.
4.4.12.2	Water	24 gal.

4.4.13 Surface Preparation - The surface of the second application of filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

4.4.14 Method of Application - Color coat shall be applied with a 24" - 48" wide flexible squeegee. The color coat shall be applied parallel to the playing net. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The color coat surface shall not be scraped to remove imperfections.

4.5 Playing Lines

4.5.1 Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft-soled shoes and kneepads or kneel on boards to prevent surface indentation. Ragged lines will not be acceptable.

5. Traffic

Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.06 TENNIS COURTS – FULL DEPTH ASPHALT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Preparation of the subgrade and base course.

2.1.2 Leveling course.

2.1.3 Filler and color coats.

2.1.4 Line markings.

2.1.5 Fence enclosure.

3. MATERIALS

3.1 Net Posts, Nets, and Fixtures

3.1.1 Net Posts shall be the Premier tennis post as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis post shall be 11-gauge steel, 3" OD with an internal wind gear. The handle and faceplate shall be chrome plated. The handle shall be removable. The post shall be finished with a forest green acrylic urethane.

3.1.2 Net Post sleeves shall be the Premier model GS-24 as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis post sleeve shall fit 3" OD net posts. PVC cap shall be included.

3.1.3 Net shall be model TN-60 tennis net as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal. The tennis net shall be 3.0 mm braided black polyethylene, 1 3/4" square mesh design with 285 lb. break strength. The top six (6) rows shall be double mesh. The headband shall be vinyl coated steel, double thickness 6.0-mm cable with 3300 lb. break strength. The net shall have reinforced black vinyl bottom and side pockets with fiberglass dowels.

3.1.4 Adjustable center strap shall be model ACS as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal.

3.1.5 Pipe anchor for the center strap tie down shall be the ANCHOR as manufactured by Douglas Industries, Inc. P.O. Box 393, Eldridge, Iowa 52748, (800) 553-8907, or approved equal.

3.1.6 Concrete shall be class B. See CAST-IN-PLACE CONCRETE, Section 6.05.

3.2 Fence Enclosure

3.2.1 Materials - The fence shall be a standard manufactured item. It shall be ten (10) feet high and the materials shall be as follows:

3.2.1.1 Line posts - 2½" OD, std. weight pipe, 3.65 lbs./ft.

3.2.1.2 Corner and gate posts - 3" OD, std. weight pipe, 5.79 lbs./ft.

3.2.1.3 Top rail - 1 5/8" OD, std. weight pipe, 2.27 lbs./ft.

3.2.1.4 Corner and gate horizontal braces - 1 5/8" OD, std. weight pipe, 2.27 lbs./ft.

3.2.1.5 Chain link fabric - #11 gauge, 1 3/4" mesh, knuckled finish, top and bottom. Fabric shall be aluminum coated with a minimum of 0.40 oz. of aluminum per square foot of uncoated wire surface. Base shall be commercial quality steel wire. Fence fabric shall pass the ASTM A491-63T tests for Class II aluminum coated wire.

3.2.1.6 Bottom wire - #7 coil spring wire.

3.2.1.7 Corner and gate post tops - Malleable iron or aluminum sand castings.

3.2.1.8 Fabric ties - Aluminum or galvanized wire of approved gauge and design.

3.2.1.9 Gate frames - 1 5/8" OD, std. weight pipe.

3.2.1.10 Internal bracing - 1 3/8" OD, std. weight pipe.

3.2.1.11 Miscellaneous fittings shall be those which are necessary to make a complete installation. All fence materials, other than chain link fabric shall be hot-dipped galvanized inside and out.

3.2.1.12 Concrete shall be class B. See CAST-IN-PLACE CONCRETE, Section 6.05.

3.3 Court

3.3.1 Subgrade shall be stabilized with four (4) inches of No. 57 coarse aggregate as specified in Section 203 of the VDOT specifications.

3.3.2 Leveling Course shall be VDOT SM-2A asphalt concrete.

3.3.3 Surface Course shall be VDOT SM-1 asphalt concrete with 3% additional asphalt cement added to the Job Mix Formula.

3.3.4 Filler coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.3.5 Color coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.3.6 Fine aggregate for filler coat and color coat shall be silica sand, 100% passing a No. 80 sieve.

3.3.7 Color coat shall be light green in the central play area and red outside.

3.3.8 Line paint shall be Latex-ite Line Paint as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

4. CONSTRUCTION

4.1 Preparation of Subgrade

4.1.1 Subgrade - All roots, sod, mulch, foreign matter, and debris shall be removed to a depth of at least 12 inches below finished grade. It shall then be prepared with proper fill, if needed, having a stable, hard, and compacted, uniform density throughout its entire length, width and depth. The subgrade area shall be compacted sufficiently to support the asphalt paver without causing deformation to the subgrade. If deformation does occur, the Contractor shall place and roll VDOT No.57 coarse aggregate into the subgrade until it supports the asphalt paver without deformation. The subgrade shall be approved by PRCS prior to construction of the leveling course.

4.2 Net Posts, Nets, and Fixtures

4.2.1 A 10" long 1/2" diameter steel rod shall be placed through the net post, 10" above the bottom. It shall protrude evenly on both sides and be welded.

4.2.2 Set net post sleeves and net anchor posts for each court in concrete. The hole for net post concrete footings shall be of the dimensions shown on the contract drawing. The hole for net anchor posts shall be 12" deep and 12" in diameter or square.

4.2.3 The top of all net post and net anchor post concrete footings shall be level with the surface of the subgrade and shall not project into the base course or asphalt leveling course.

4.2.4 The net shall not be installed until the Contractor has received approval of the installation of the color coat surface from PRCS.

4.3 Fence Enclosure

4.3.1 The fence fabric shall not be installed until the Contractor has received PRCS approval of the installation of the color coat surface.

4.3.2 Line posts shall be set approximately 3'-0" below finished ground level. They shall be spaced in the line of fence at a maximum of 10'-0" apart.

4.3.3 Corner and gate posts shall be set approximately 3'-0" below finished ground level. (Note: line, corner, and gate posts shall be set in cylindrical concrete foundations. The hole for the concrete footings shall be 6" deeper than the bottom of the posts and a minimum of 12" in diameter).

4.3.4 Top rail shall be furnished in random lengths averaging not less than 20' and joined with extra long pressed steel sleeves providing a rigid connection but allowing for expansion and contraction.

4.3.5 All corner and gate posts shall be braced by a horizontal pipe securely attached to corner and first line posts with malleable iron or aluminum sand cast fittings, leveled edge bands and truss braced with 3/8" rod and take up.

4.3.6 The fabric shall be placed on the courtside. It shall be fastened to line posts at approximately 24" intervals. The bottom reinforcing wire shall be securely clipped to the fabric at a maximum of 18" intervals.

4.3.7 The bottom of the fabric shall be 1" above the finished surface.

4.3.8 Location of the fence shall be as shown on the plan. The 3'-0" gate openings shall be as shown on the plan.

4.4 Asphalt Court

4.4.1 Samples of aggregate to be used in connection with the project shall be submitted together with a report of aggregate gradation and recommended binder content one week prior to beginning construction.

4.4.2 During construction the Contractor shall submit test results of the aggregate gradation and binder content of the mixes (minimum of two (2) tests). Either the material supplier or an independent laboratory may make these tests. Costs incurred as a result of any of the above tests will be borne by the Contractor.

4.4.3 The leveling course shall be thoroughly compacted to a depth of two (2) inches with a maximum of 3% air voids. The finished surface shall not vary from the specified grade more than 1/4 inch in ten feet when measured in any direction.

4.4.4 The surface course shall be thoroughly compacted to a depth of 1 1/2 inches. The finished surface shall not vary from the specified grade more than 1/8 inch in ten feet when measured in any direction.

4.4.5 Field density determination will be performed with the nuclear field density device utilizing the density control strip as specified under VDOT Section 304 and Virginia Test Method - 10 (VTM-10).

4.4.6 The compacted bituminous concrete shall be saw-cut to a depth of four (4) inches as shown on the plan and detail, and filled with the joint filler specified.

4.4.7 All filler coat and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

4.4.8 Filler coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.8.1	Latex-ite	55 gal.
4.4.8.2	80 Mesh Sand	400 lbs.
4.4.8.3	Water	24 gal.

4.4.9 Surface Preparation - The surface shall be thoroughly cleaned, removing all loose dirt, dust, oil grease, leaves and other debris. The court shall be checked with a ten-foot straightedge or shall be flooded with water to locate low areas that are more than 1/8" deep. Minor depressions, 1/8" - 1/4" deep shall be leveled by troweling or screeding a layer of patch mix over the low area. Suitable patch mix is Latex-ite filler coat that has not been diluted with water. Depressions 1/4" to 1/2" require multiple layers of patch mix. Depressions exceeding 1/2" shall be filled with VDOT SM-1 asphalt concrete. All rough paving joints and roller marks shall be leveled prior to application of the filler coat.

4.4.10 Method of Application - Latex-ite shall not be stored in direct sunlight or allowed to freeze. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The first filler coat shall be applied perpendicular to the playing net. The entire surface shall be checked for ridges between the first and second filler coat applications, and following the second application. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris. The second filler coat shall be applied parallel to the playing net. Uniformly apply the filler coat with a 24" to 48" wide flexible rubber squeegee. No irregularities of texture or level are to be left for correction by color coat application.

4.4.11 Coverage - Each filler coat shall be applied at a rate of .05 gal. per square yard. Allow two (2) hours of dehydrating time between each application.

4.4.12 Color coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.12.1	Latex-ite	55 gal.
4.4.12.2	Water	24 gal.

4.4.13 Surface Preparation - The surface of the second application of filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

4.4.14 Method of Application - Color coat shall be applied with a 24" - 48" wide flexible squeegee. The color coat shall be applied parallel to the playing net. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The color coat surface shall not be scraped to remove imperfections.

4.5 Playing Lines

4.5.1 Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft-soled shoes and kneepads or kneel on boards to prevent surface indentation. Ragged lines will not be acceptable.

5. Traffic

5.1 Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.07 TENNIS PRACTICE COURT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Preparation of the subgrade and base course.

2.1.2 Leveling course.

2.1.3 CMU masonry wall.

2.1.4 Filler and color coats.

2.1.5 Line markings.

2.1.6 Fence enclosure.

3. MATERIALS

3.1 Fence Enclosure

3.1.1 Materials - The fence shall be a standard manufactured item. It shall be ten (10) feet high and the materials shall be as follows:

3.1.1.1 Line posts - 2 1/2" OD-std. weight pipe, 3.65 lbs./ft.

3.1.1.2 Corner and gate posts - 3" OD-std. weight pipe, 5.79 lbs./ft.

3.1.1.3 Top rail - 1 5/8" OD-std. weight pipe 2.27 lbs./.ft.

3.1.1.4 Corner and gate horizontal braces - 1 5/8" OD-std. weight pipe 2.27 lbs./ft.

3.1.1.5 Chain link fabric - #11 gauge, 1 3/4" mesh, knuckled finish, top and bottom. Fabric shall be aluminum coated with a minimum of 0.40 oz. of aluminum per square foot of uncoated wire surface. Base shall be commercial quality steel wire. Fence fabric shall pass the ASTM A491-63T tests for Class II aluminum coated wire.

3.1.1.6 Chain link fabric for top of ball wall - 11 gauge, 1" mesh, knuckled finish, top and bottom. Fabric shall be aluminum coated with a minimum of 0.40 oz. of aluminum per square foot of uncoated wire surface. Base shall be commercial quality steel wire. Fence fabric shall pass the ASTM A491-63T tests for Class II aluminum coated wire.

3.1.1.7 Bottom wire - #7 coil spring wire.

3.1.1.8 Corner and gate post tops - Malleable iron or aluminum sand castings.

3.1.1.9 Fabric ties - Aluminum or galvanized wire of approved gauge and design.

3.1.1.10 Gate frames - 1 5/8" OD-std. weight pipe.

3.1.1.11 Internal bracing - 1 3/8" OD-std. weight pipe.

3.1.1.12 Miscellaneous fittings shall be those which are necessary to make a complete installation. All fence materials, other than chain link fabric shall be hot-dipped galvanized inside and out.

3.1.2 Concrete Footings

3.1.2.1 Concrete shall be class B. See CAST IN PLACE CONCRETE, Section 6.05.

3.2 Court

3.2.1 Primer shall be MC-30 or MC-70 low viscosity asphalt conforming to VDOT Section 211.

3.2.2 Base Course shall be VDOT Type I, 21A, crushed stone.

3.2.3 Leveling Course shall be VDOT SM-2A asphalt concrete.

3.2.4 Surface Course shall be VDOT SM-1 asphalt concrete.

3.2.5 Samples of aggregate to be used in connection with the project will be submitted together with a report of aggregate gradation and recommended binder content one week prior to beginning construction.

3.2.6 Filler coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.2.7 Color coat shall be Latex-ite Acrylic Color System as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.2.8 Fine aggregate for filler coat and color coat shall be silica sand, 100% passing a No. 80 sieve.

3.2.9 Color coat shall be light green in the central play area and red outside.

3.2.10 Line paint shall be Latex-ite Line Paint as manufactured by American Tennis Courts, Inc., 4051 North Point Road, Baltimore, Maryland 21222, or approved equal.

3.3 Ball Wall

3.3.1 Concrete Masonry Units (CMU)

3.3.1.1 ASTM C 90 (Grade N-1 Moisture cured). Lightweight aggregate, hollow.

3.3.1.2 Provide autoclave treatment of CMU @ 350□ F,125 psi.

3.3.1.3 Corner units shall have square external corners. Provide units as necessary for the conditions shown. The texture of units shall match the approved samples for the type of construction and the locations designated. Exposed units shall not contain iron spots or other substances that will stain paint.

3.3.2 Continuous Masonry Wire Reinforcing for Straight Walls

3.3.2.1 Truss design, 9 gauge welded steel wire, 0.8 oz. hot dip zinc coating (after fabrication) for exterior walls, mill-galvanized wire for interior walls, width 1 1/2" - 2" less than wall thickness.

4. CONSTRUCTION

4.1 Preparation of Subbase

4.1.1 Subbase - The subbase area shall be compacted to 95% density at optimum moisture content and all roots, sod, mulch, foreign matter, and debris removed to a depth of at least 12 inches below finished grade. It shall then be prepared with proper fill, if needed, having a stable, hard, and compacted, uniform density throughout its entire length, width and depth. The subbase shall be approved by PRCS prior to construction of the base course.

4.2 Fence Enclosure

4.2.1 All line and corner posts and footings shall be shall be installed prior to placement of the court base, leveling, and surface courses.

4.2.2 Line posts shall be set approximately 3'-0" below finished ground level. They shall be spaced in the line of fence at a maximum of 10'-0" apart.

4.2.3 Corner and gate posts shall be set approximately 3'-0" below finished ground level. (Note: line, corner, and gate posts shall be set in cylindrical concrete foundations. The hole for the concrete footings shall be 6" deeper than the bottom of the posts and a minimum of 12" in diameter).

4.2.4 Top rail shall be furnished in random lengths averaging not less than 20' and joined with extra long pressed steel sleeves providing a rigid connection but allowing for expansion and contraction.

4.2.5 All corner and gate posts shall be braced by a horizontal pipe securely attached to corner and first line posts with malleable iron or aluminum sand cast fittings, leveled edge bands and truss braced with 3/8" rod and take up.

4.2.6 The fence fabric shall be installed before the installation of the color coat surface.

4.2.7 The fabric shall be placed on the courtside. It shall be fastened to line posts at approximately 24" intervals. The bottom reinforcing wire shall be securely clipped to the fabric at a maximum of 18" intervals.

4.2.8 The bottom of the fabric shall be one (1) inch above the finished surface.

4.2.9 Location of the fence shall be as shown on the plan. The 3'0” gate openings shall be as shown on the plan.

4.3 Court

4.3.1 During construction the Contractor shall submit test results on the aggregate gradation and binder content of the mixes (minimum of two (2) tests). Either the material supplier or an independent laboratory may make these tests. Costs incurred as a result of any of the above tests will be borne by the Contractor.

4.3.2 Base - The base shall be uniformly spread and compacted with 8 to 10 ton roller to a minimum depth of four (4) inches.

4.3.3 Primer - A pressure distributor shall be used to prime the prepared surface of absorbent base at a rate, under average conditions, from 0.20 to 0.50 gallon per square yard. The asphalt should be entirely absorbed by the base course. If it is not absorbed within 24 hours after application, sand shall be spread over the surface to blot the excess asphalt. Care shall be exercised, however to prevent overpriming. The prime shall be fully set and cured before placing the surface treatment.

4.3.4 Leveling Course - The leveling course shall be thoroughly compacted by rolling with an 8 to 10 ton roller to a compacted depth of 1 1/2 inches. The finished surface shall not vary from the specified grade more than 1/4 inch in ten (10) feet when measured in any direction.

4.3.5 Surface Course - The surface course shall be thoroughly compacted by rolling with an 8 to 10 ton roller to a compacted depth of one (1) inch. The finished surface shall not vary from the specified grade more than 1/8 inch in ten (10) feet when measured in any direction.

4.4 Ball Wall

4.4.1 Construct masonry units in the bond pattern indicated.

4.4.2 Cut exposed masonry units, where necessary, with power saw. Avoid the use, by proper layout, of less than half size units.

4.4.3 Hold uniform joint sizes as indicated, or if not indicated, hold 3/8" joints.

4.4.4 Cut all joints flush, unless otherwise indicated.

4.4.5 Protect newly laid masonry from exposure to precipitation, excessive drying, freezing, soiling, backfill and other harmful elements.

4.4.6 All filler coat and color coat required for the job shall be on the job site prior to beginning the squeegee phase of construction.

4.4.7 Filler coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.7.1	Latex-ite	55 gal.
4.4.7.2	80 Mesh Sand	400 lbs.
4.4.7.3	Water	24 gal.

4.4.8 Surface Preparation - The surface shall be thoroughly cleaned, removing all loose dirt, dust, oil grease, leaves and other debris. The court shall be checked with a ten-foot straightedge or shall be flooded with water to locate low areas that are more than 1/8" deep. Minor depressions, 1/8" - 1/4" deep shall be leveled by troweling or screeding a layer of patch mix over the low area. Suitable patch mix is Latex-ite filler coat that has not been diluted with water. Depressions between 1/4" and 1/2" deep require multiple layers of patch mix. Depressions exceeding 1/2" shall be filled with VDOT SM-1 asphalt concrete. All rough paving joints and roller marks shall be leveled prior to application of the filler coat.

4.4.9 Method of Application - Latex-ite shall not be stored in direct sunlight, or allowed to freeze. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The first filler coat shall be applied perpendicular to the ball wall. The entire surface shall be checked for ridges between the first and second filler coat applications, and following the second application. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris. The second filler coat shall be applied parallel to the playing net. Uniformly apply the filler coat with a 24" to 48" wide flexible rubber squeegee. No irregularities of texture or level are to be left for correction by color coat application.

4.4.10 Coverage - Each filler coat shall be applied at a rate of .05 gal. per square yard. Allow two hours of dehydrating time between each application.

4.4.11 Color coat mix design. All materials shall be mixed to a uniform free-flowing consistency.

4.4.11.1	Latex-ite	55 gal.
4.4.11.2	Water	24 gal.

4.4.12 Surface Preparation - The surface of the second application of filler coat shall be checked to insure a smooth and uniform texture, free from ridges, and tool marks. All imperfections shall be scraped smooth and the court surface cleaned of all loose debris.

4.4.13 Method of Application - Color coat shall be applied with a 24" - 48" wide flexible squeegee. The color coat shall be applied parallel to the playing net. The color coat shall not be applied when the ambient air temperature is below 50 degrees Fahrenheit, when the court surface temperature is above 140 degrees Fahrenheit, or when rain is imminent. The color coat surface shall not be scraped to remove imperfections.

4.4.14 The ball wall shall receive color coat on all exposed surfaces per manufacturer's recommendations and as shown on the plans.

4.5 Playing Lines - Court Surface and Ball Wall

4.5.1 Allow the color coat to cure before painting lines. This may vary from 2 to 4 days under good curing conditions. Two inch wide playing lines shall be accurately located and marked. White line paint shall be used. Painters shall use soft-soled shoes and kneepads or kneel on boards to prevent surface indentation. Ragged lines shall not be acceptable.

5. TRAFFIC

Protect from traffic during all operations and until opening for use. Allow the color coat surface to cure at least 24 hours before allowing light foot traffic. Following painting of the lines, the court shall be allowed to cure for a minimum of 4 days before being opened for play.

SECTION 4.08 SPORTS COURT ELECTRICAL SYSTEM

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Underground electric services.

2.1.2 Provide a complete system of lighting panels, wiring raceways, feeders, and lighting fixtures, poles and branch circuits including all conduits, cables, conductors, boxes, wiring device, etc.

2.1.3 Lighting fixtures, lamps, brackets and poles.

2.1.4 Temporary electric service during construction.

2.1.5 Grounding system as indicated on drawings and specified herein.

2.1.6 Permits and certificates.

3. CODES AND STANDARDS

3.1 Installation of all electrical work shall be in accordance with the following regulations, codes, etc.

3.2 Local electrical codes and ordinances.

3.3 National Electrical Code.

3.4 National Board of Fire Underwriters.

3.5 Rules and regulations of Dominion Virginia Power or Northern Virginia Electrical Cooperative (NOVEC).

4. REGULATIONS

The Contractor shall effectively protect at his expense, such of his work, materials, and equipment, as is liable to injury during the construction period. The Contractor shall be held responsible for all damage so done until his work is fully and finally accepted.

5. CERTIFICATE OF INSPECTION

The Contractor shall, at his expense, have an inspection made by the Loudoun County Department of Building & Development, Electrical Inspections, of the complete electrical installation and shall deliver the certificate of approval of the complete work to PRCS before receiving his final payment.

6. PERMITS

6.1 The Contractor shall obtain all necessary permits from any authority required for his work. Loudoun County PRCS shall waive any permit fees.

6.2 Copies of all permits and approvals shall be submitted to PRCS.

7. MANUFACTURER'S DRAWINGS

7.1 The Contractor shall submit manufacturer's drawings for the following electrical equipment to be installed on the job, for PRCS's approval, before ordering same for installation.

7.1.1 Panel boards.

7.1.2 Lighting fixtures, poles, and brackets.

7.1.3 Relays, time clocks, and contractors.

7.1.4 No substitutions shall ordinarily be accepted. To insure the use of any item as and equal, such approval shall be obtained prior to installation.

8. CHARACTER OF MATERIALS AND EQUIPMENT

8.1 All material and equipment, except as herein otherwise noted, shall be new and conform to standards specified herein. Equipment is herein defined to include conduits, cable, wiring, materials and devices, panel boards, relays, etc.

8.2 All materials and equipment shall be of an approved standard design. Similar materials shall be of one manufacturer wherever possible.

8.3 All equipment offered under these specifications shall be limited to products regularly produced and recommended for service ratings in accordance with manufacturers' catalogs, engineering data, or other comprehensive literature made available to the public and in effect at the time of opening bids.

8.4 Equipment shall be installed in strict accordance with manufacturers' instructions for type, capacity and suitability of each piece of equipment used.

8.5 The Contractor shall obtain these instructions which shall be considered a part of these specifications.

9. RACEWAYS AND FITTINGS

9.1 When service does not already exist on the site, the contractor shall extend ducts as indicated on the plans for electric company service, encased on all sides with 3" of concrete, and enveloped with proper space allowed at end for extension by the electric company.

9.2 Underground and in pole base - galvanized rigid steel conduit.

9.3 Panel feeders - galvanized rigid steel conduit.

9.4 Branch circuits above grade in service enclosures shall be in galvanized rigid steel conduit.

10. CONDUCTORS

10.1 All conductors shall be copper and shall be accordance with the National Electrical Code.

10.2 #12 AWG shall be the smallest wire size used.

10.3 Materials shall be new and as follows:

10.3.1 Panel feeders - RHW or THW, 600 volt.

10.3.2 Branch feeders #6 AWG and larger - THW or RHW.

10.3.3 Branch feeders #8 AWG and smaller - RHW or TW, 600 volt.

10.3.4 Underground - direct burial type UF 600 volt, 60 degrees C cable.

11. WORKMANSHIP

11.1 All wiring shall be color coded to identify phases, neutral and switch legs.

11.2 Direct burial cable shall be run below grade at depth indicated. If unsuitable rocky soil is encountered, a 6” layer of sand shall be installed at the top and bottom of cable, or install cable in appropriate conduit or other approved means.

12. ELECTRICAL SERVICES

12.1 The service shall be underground 3 phase, 4 wire, 120/240 volts from the appropriate utility company pad mounted transformer. The Contractor shall provide secondary conduits and raceways between the pad and C/T cabinets in accordance with the utility company requirements and install the C/T cabinets and meters supplied by the utility company.

12.2 The Contractor shall arrange with the appropriate utility company for service and shall be responsible for verification of the same and shall pay all service charges.

12.3 The Contractor shall install all electrical components in a Hoffman-padlockable steel NEMA 3 enclosure. The panel shall be sized to have the back mounting wall panel be 200% of the space of the electrical components.

13. PANELBOARDS

13.1 The panel boards shall be constructed in accordance with the standards set up by the Underwriters Laboratories, Inc., and shall contain the number and type of circuit breakers as indicated on the drawings and as indicated on the drawings and as manufactured by G.E., Westinghouse, Square D, or ITE.

13.2 The panel boards shall be equipped with flush locks. Furnish six (6) keys.

13.3 All surface mounted panels shall be mounted on 12 gauge formed steel channel having a cross section dimension of at least 1" x 1". The channel and fittings shall have Gal-V-Kren or hot-dipped galvanized finish. Channels shall be installed vertically.

13.4 Stencil the panel number or letter to the inside of the panel door to correspond with the panel designation on the drawings.

13.5 Panels calling for spaces shall have bus mounting holes and knock-outs in the front cover for future breakers.

13.6 All details of the panel board shall be submitted to PRCS for approval before construction is begun.

13.7 All 240/120 volt panels shall be G.E. type NLAB on NAB as shown on the drawings.

13.8 All panels shall be equipped with a ground bus.

14. GROUND

14.1 The Contractor shall provide a ground for service neutral, service wireway, metallic conduits, poles, cabinet devices and utilization equipment permanently and effectively in accordance with requirements of Article 250 of the National Electrical Code. All grounding and bonding connections shall be solderless.

15. WIREWAY

Wireways shall be the standard manufactured product of a company regularly producing wireway and shall not be a local shop assembled unit. Wireways shall be of the hinged cover type; Underwriters' Laboratories listed and of sizes indicated or as required by NEC if not indicated. Finish shall be ASA No. 49 medium light gray enamel over rust inhibitor.

16. CONTACTORS AND RELAYS

16.1 Contractors and relays shall be of the single coil, electrically-operated, mechanically-held type. Positive locking shall be obtained without the use of hoods, latches or semi-permanent magnets. Control stations shall be required to make but not break the operating coil current.

16.2 Main contacts of contractors shall be double break silver to silver type protected by arcing contacts. Contacts shall be self-aligning and renewable from the front of the panel.

16.3 Control connections shall be clearly marked "L" for line wire, "C" for closing wire and "O" for opening wire. A manual operating lever shall be included.

16.4 Contractors shall be Underwriters' Laboratories listed at full load rating for use with gas-filled tungsten filament lamps and shall be Automatic Switch Company "Type RC" Bulletin 920 Remote Control Switch or approved equal.

16.5 Relays shall be Automatic Switch Company Bulletin 1255 or approved equal.

17. TIME CLOCK

17.1 The time switch shall be Tork Model W-120L or approved equal, seven day calendar dial type, capable of being set for different ON/OFF times each day of the week, to an operating accuracy of plus or minus 15 minutes of desired time.

17.1.1 It shall be possible to have a minimum of one (1) hour between an ON and OFF operation with a minimum of four (4) ON/OFF trippers on the dial.

17.1.2 ON/OFF operations shall be accomplished by removable ON/OFF trippers on the dial.

17.2 Time switch contacts shall be capable of carrying a minimum of 40 amperes per pole continuously at 120 volts and shall be SPDT.

17.3 Enclosure shall be Nema 1 surface type, finished in baked gray enamel and with knockouts on the bottom, both sides and top.

17.4 The time switch shall be powered by a self-starting synchronous motor with spring driven reserve sufficient to operate the time switch contacts at least 16 hours after power failure. On restoration of power, the time switch shall transfer to synchronous motor drive and automatically rewind reserve.

17.5 Terminals shall be of copper pressure type, capable of receiving #6 AWG wire.

18. LIGHTING FIXTURES AND LAMPS

Fixtures shall be furnished and installed as indicated on the plans. Fixtures shall be complete with all required sockets, wiring, reflectors, and fittings, necessary for a complete installation. All fixtures shall be completely lamped and operating at the time of final acceptance.

19. PRIME PAINTED STEEL POLES

19.1 Poles shall be heavy-duty round tapered rigid steel with a 2" standard pipe (2 3/8" OD) top tenon.

19.2 Poles shall be 11 gauge single piece construction with guaranteed minimum yield strength of 48,000 psi.

19.3 A 4" x 6 1/2" handhole for wire splicing shall be located 12" above the flat plate base and furnished with a reinforcing frame and cover.

19.4 Poles and bases shall have a shop coat of rust-inhibitive primer inside and out and shall be field painted with two (2) coats of flat black oil base paint.

19.5 Galvanized anchor rods and plate nuts shall be furnished with each pole.

SECTION 4.09 WARNING TRACK & FENCE MOW STRIP

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

   2.1 Installation of stonedust warning track and fence mow strip on baseball/softball fields.

3. GENERAL REQUIREMENTS

   3.1 Stonedust shall be crushed bluestone, or similar, of standard grade, free of debris.

   3.2 Underlayment material shall be spunbound and/or woven fabric

   3.3 Fence mow strips shall extend 12" on either side of fence.

   3.4 Warning track shall be 10' for 200' ball fields; 15' for 300'+ fields inside the fence and extend 12" outside the fence.

4. INSTALLATION

   4.1 Area shall be excavated to depth of 4" from final grade. Grade must be maintained.

   4.2 Base shall be mechanically tamped or rolled.

   4.3 Continuous or overlapped underlayment fabric shall be rolled to cover 100% base surface. Joined edges shall be overlapped, minimum of 12".

   4.4 Stonedust shall be placed and rolled or tamped to match surface grade.

SECTION 4.10 BALLFIELD EQUIPMENT BOX

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. PRODUCT

2.1 30’ x 30” x 72” steel storage box with side or front additional access. Factory painted green. Safety lid with emergency release to prevent lock-in, compression spring lid to prevent slamming closed, double padlock hasp for use with basic combination lock.

3. SOURCES

3.1 Model BFB3072 as manufactured by Thybar Equipment Boxes or equal.

SECTION 4.11 ATHLETIC FIELD LIGHTING STANDARDS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

1.2 Athletic Field Lighting Standards will parallel the Fairfax County Park Authority Athletic Field Lighting Systems Performance Specifications as outlined in the Revision 2.2 outline, dated September 1, 2006.

1.3 Class of Play Category (IESNA RP-6-01) will be Category III.

1.4 Lighting Environmental Zone.

2. GENERAL DESIGN CRITERIA

2.1 Class of Play Category (IESNA RP-6-01) ……... Category III.

2.2 Lighting Environmental Zone Classification (IESNA RP-33-99).... LEZ 2 and LEZ 3

2.3 Aimable System.

2.4 Light Loss Factor (LLF)……0.80[1]

3. ELECTRICAL REQUIREMENTS

3.1 Voltage…… 480 Volt, 3 Phase

3.2 Lamp……. .1,500 Watt metal halide

3.3 Luminaires (including spill and glare control devices)……. UL 1598-00

3.4 Electrical equipment enclosures……. NEMA 3R

4. LIGHTING PERFORMANCE REQUIREMENTS

4.1 ON-FIELD – Rectangular Fields

4.1.1 Maximum permitted illuminance……50 foot-candles

4.1.2 Maintained average horizontal illuminance……...33 foot-candles[2]

1 Alternate Light Loss Factors will be considered. A Tilt Factor is required when applicable.
2 Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 30 foot-candles.

4.1.3 Uniformity Ratio not to exceed…….. 3:1

4.1.4 Calculation and on-field measurement grid (see Figures 1 to 5) 15 ft x 15 ft

4.2 ON-FIELD – Baseball/Softball Fields

4.2.1 Maximum permitted illuminance…… 60 foot-candles

4.2.2 Min. maintained average horizontal illuminance (Infield)…. 55 foot-candles[3]

4.2.3 Min. maintained average horizontal illuminance (Outfield).. 33 foot-candles[4]

4.2.4 Uniformity Ratio not to exceed (Infield)…… 2:1

4.2.5 Uniformity Ratio not to exceed (Outfield)…….. 2.5:1

4.2.6 Calculation and on-field measurement grid (see Figures 1 to 5)... 15 ft x 15 ft

4.3 OFF-FIELD – Standard A[5]

4.3.1 Maximum permitted initial vertical spill[6]…….. 0.3 foot-candles

4.3.2 Maximum permitted initial glare……. 7,000 candelas

4.4 OFF-FIELD – Standard B[7]

4.4.1 Maximum permitted initial vertical spill[6]……... 0.8 foot-candles

4.4.2 Maximum permitted initial glare……. 12,000 candelas

5. REMOTE CONTROL SYSTEM REQUIREMENTS

5.1 A security code based, 24-hour, remote control system that enables PRCS to remotely turn the system on or off, control the field lighting schedule, and monitor the system, using telephone, world-wide-web or software driven computer.

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3 Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 50 foot-candles.

4 Testing tolerance 10% included therefore field measured maintained average horizontal illuminance levels shall not be below 30 foot-candles.

5 When a residential property line is 200 ft or less from a field perimeter line, foul line, or outfield fence line as applicable and indicated on Figures 1 to 5 Standard A will apply.

6 Spill light measurement grid points at 30 ft on center as shown of Figures 1 to 5. Measurements shall be in the vertical plane at 5 ft above grade, with the meter oriented towards a point at the center of the field 50 ft above grade.

7 When a residential property line is more than 200 ft from a field perimeter line, foul line, or outfield fence line as applicable and indicated on Figures 1 to 5 Standard B will apply.

5.2 The remote control system shall be protected against power outages and memory loss, shall reboot to real-time once power is restored, and execute any commands issued prior to the outage.

5.3 The remote control system shall monitor and provide reports of actual lighting system usage.

5.4 On-site equipment shall include manual on/off switches to allow for maintenance and manual operation.

5.5 The system shall be capable of operating any given field from multiple computers via the internet.

5.6 The system shall be capable of being integrated with and controlled by schedules within Vermont Systems Inc. RecTrac.

6. POLE AND FOUNDATION STANDARDS

6.1 Pole locations……..... As shown on Figures 1 to 5

6.2 Pole height (above finished grade)……. maximum 90 ft.

6.3 Pole material…… ASTM A595, hot-dip galvanized steel

6.4 Design criteria……. Dead load and basic wind velocity of 90 mph. plus gust factor

6.5 Foundation……. Reinforced concrete [8]

7. WARRANTY AND MAINTENANCE REQUIREMENTS

7.1 The lighting system manufacturer shall provide all materials and labor to ensure all lighting system components, excluding lamps, remain in good operating condition for a ten (10)year Warranty Period.

7.2 The lighting system manufacturer shall provide all materials and labor to ensure the lighting systems performs as designed, throughout the Maintenance Period of 7,500 service hours or 15 years, whichever occurs first. During the Maintenance Period the manufacturer shall:

7.2.1 Maintain lighting levels within +/- 10% of the maintained horizontal average luminance level for the entire field.

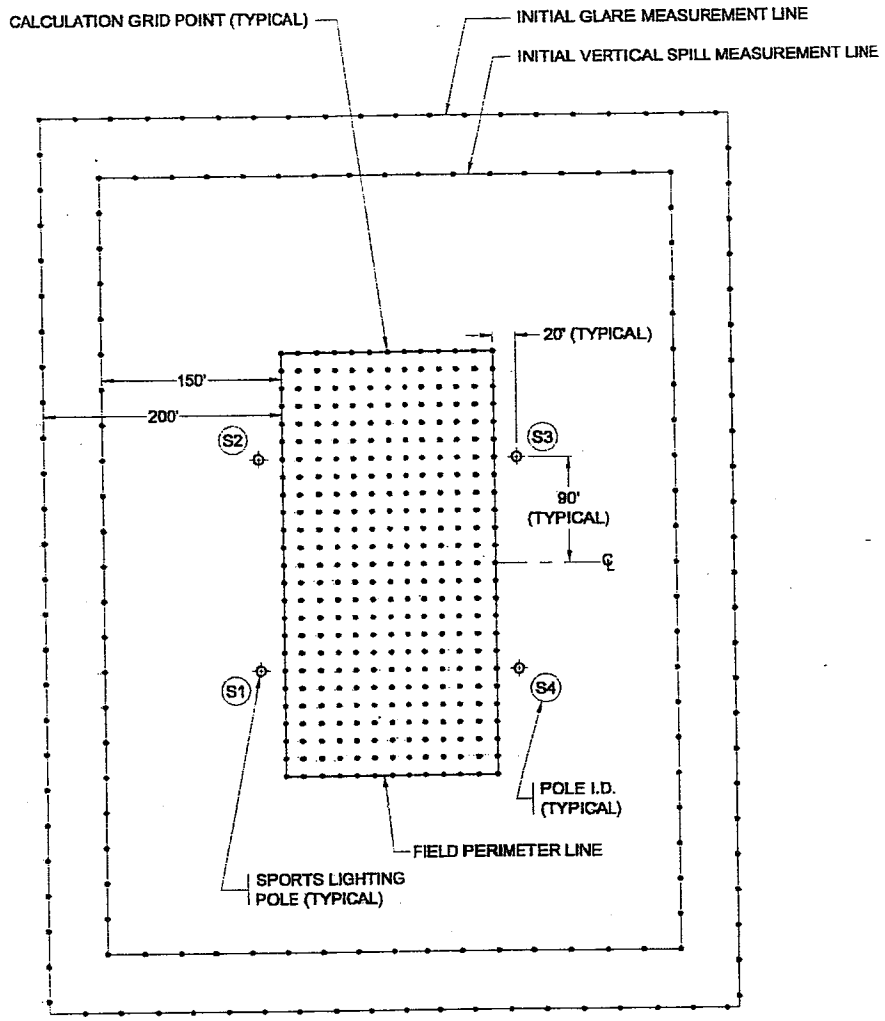
7.2.2 Group-replace all lamps when they reach the end of their service life as specified by the lamp manufacturer.

8 Foundations are to be designed by a Professional Engineer registered in Virginia.

7.2.3 Spot-replace individual lamps when 10% of the lamps are extinguished on the entire field or more than one lamp is extinguished on any one pole.

7.3 All repairs shall be made within two (2) weeks of notification.

FIGURE 1 (REV A)



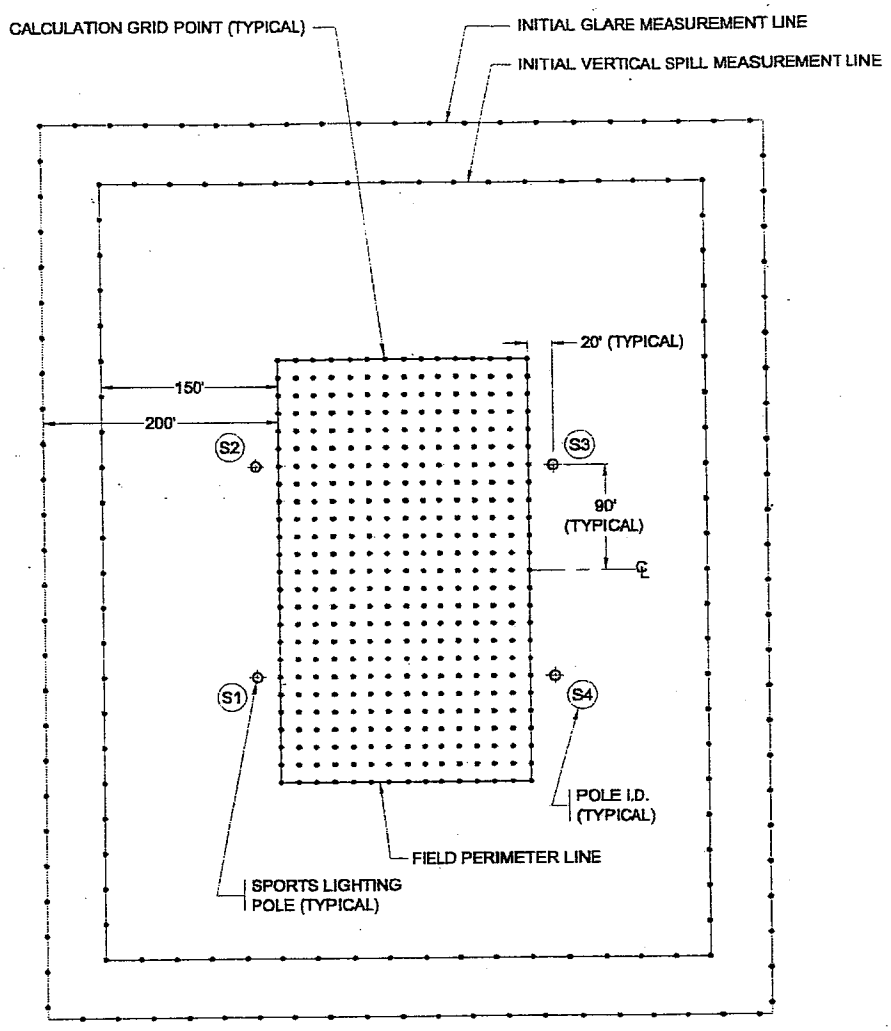
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

SMALL RECTANGULAR FIELD LAYOUT DRAWING

(180'W x 360'H)

0 50ft 100ft

FIGURE 2 (REV A)



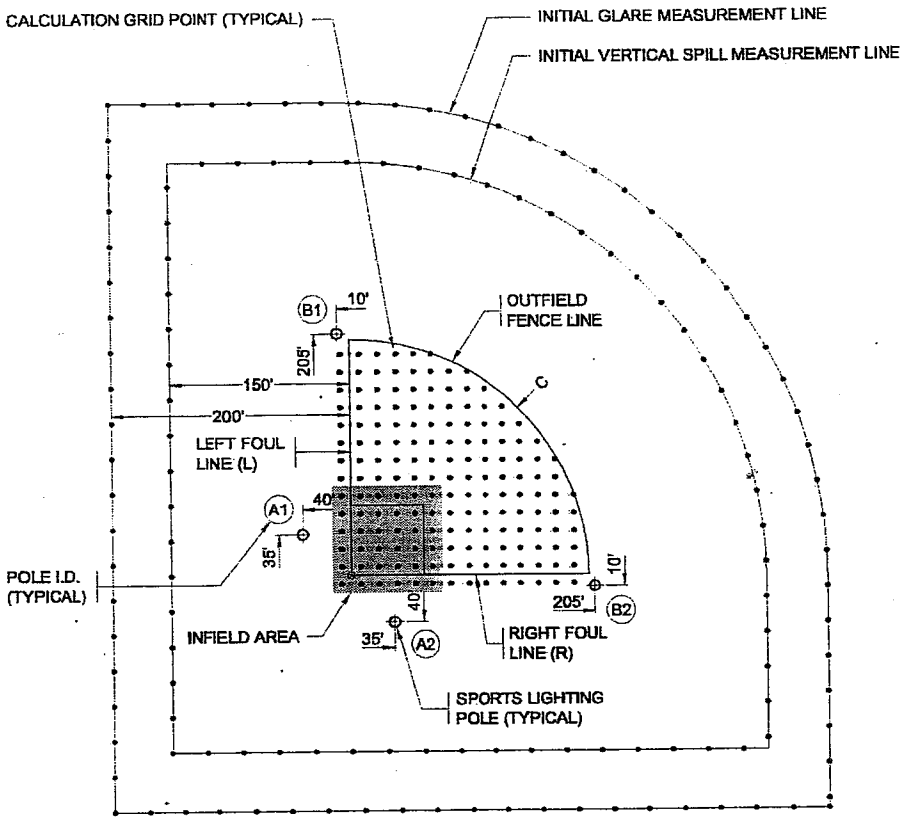
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

LARGE RECTANGULAR FIELD LAYOUT DRAWING

(210'W x 360'H)

0 50ft 100ft

FIGURE 3 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT)

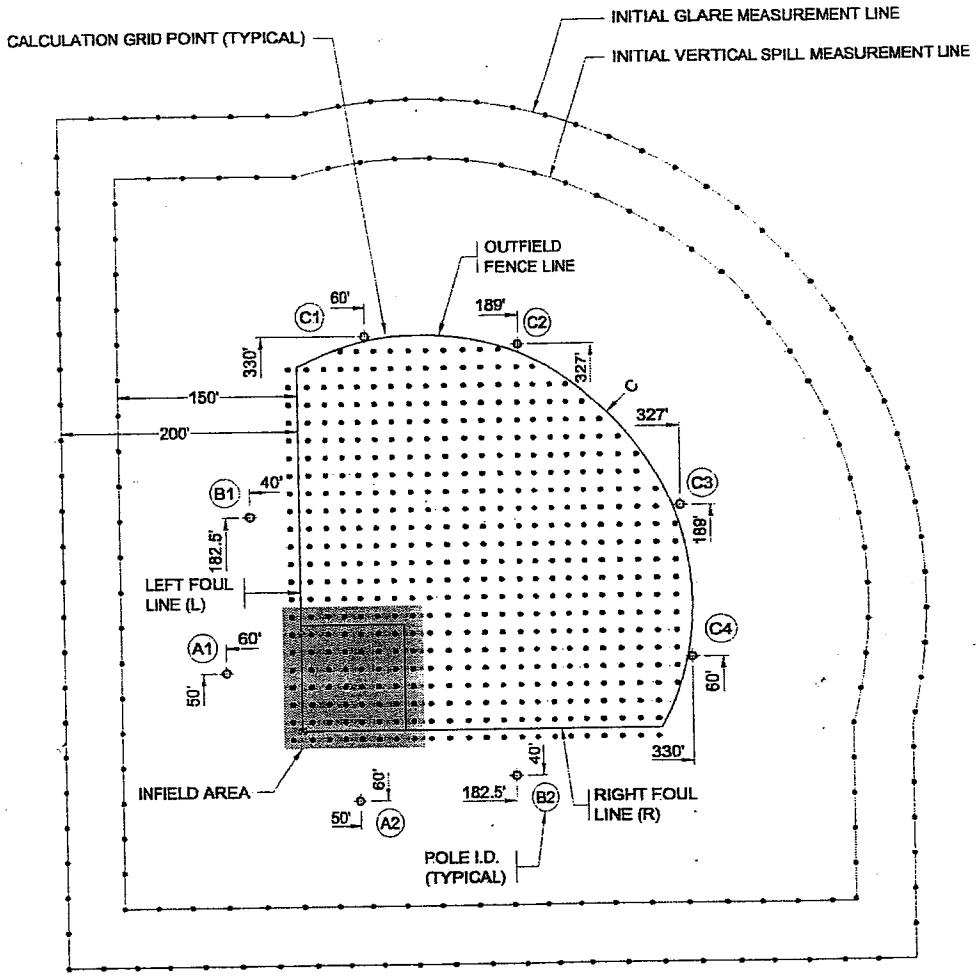
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

LITTLE LEAGUE - U13 / FAST PITCH DIAMOND FIELD LAYOUT DRAWING

(L=200', C=200', R=200')

0 50ft 100ft

FIGURE 5 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT) ⊗

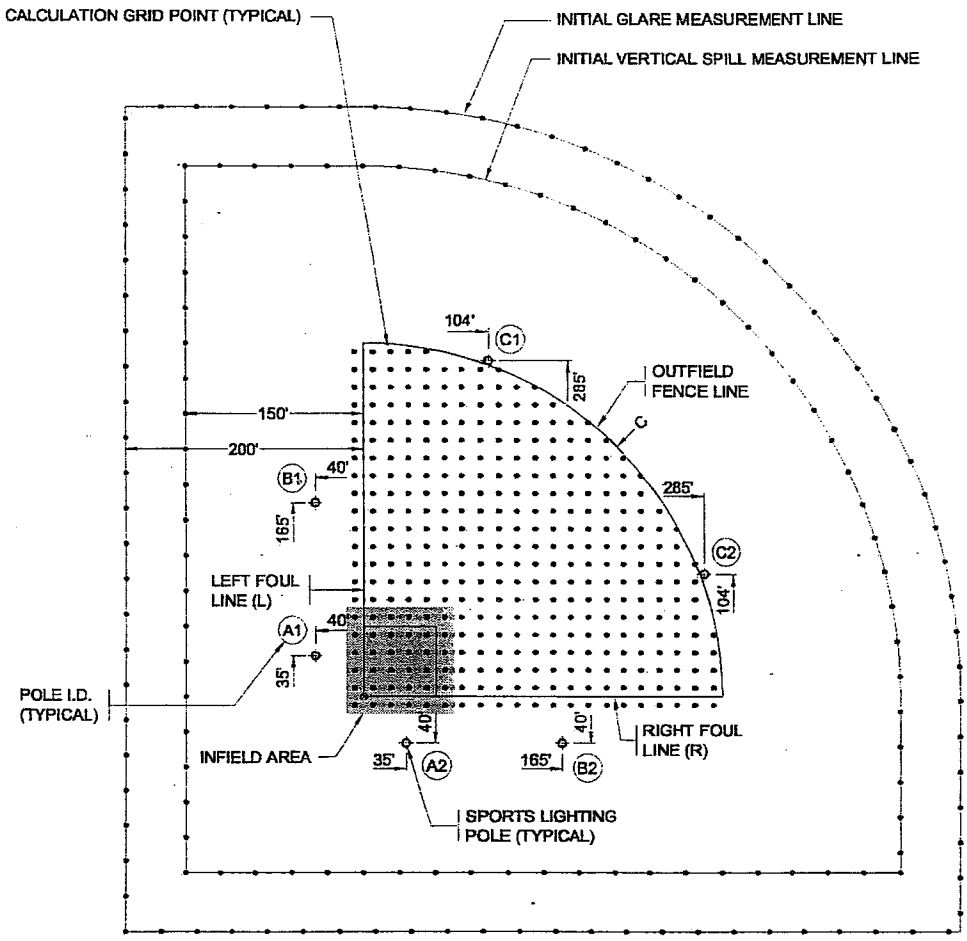
NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

BABE RUTH / BASEBALL DIAMOND FIELD LAYOUT DRAWING

(L=310', C=380', R=310')

0 50ft 100ft

FIGURE 4 (REV A)



POLE LOCATION DIMENSIONS ARE RELATIVE TO HOME PLATE (0,0 REFERENCE POINT) ⊗

NOTE:
POLE LOCATIONS, GRID LAYOUTS, MEASUREMENT LINES, FIELD SIZE AND POLE NUMBERING MUST BE AS PER LAYOUT ABOVE.

SLOW PITCH / SOFTBALL DIAMOND FIELD LAYOUT DRAWING

(L=300', C=300', R=300')

0 50ft 100ft

SECTION 4.12 ATHLETIC FIELD TURF

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of the installation, establishment, and acceptance of an athletic field playing surface.

2.1.1 Seeding.

2.1.2 Sprigging.

2.1.3 Sodding.

3. GENERAL REQUIREMENTS

3.1 Application of turf material after final grade and soil bed is approved by PRCS Maintenance Division.

3.2 Playing area should be clearly staked to include required overrun areas.

3.3 Contractor shall supply certification information to PRCS Maintenance Division.

3.4 Soil tests showing nutrition, pH, and organic content shall be provided to PRCS Maintenance Division.

4. TURF TYPES

4.5 Selection of appropriate varieties to be coordinated with PRCS Maintenance Division.

4.6 Certified seed of cool season or Bermuda varieties as listed for the Washington DC metropolitan area.

4.7 Certified sprigs of Hybrid Bermuda as listed for the Washington DC metropolitan area.

4.8 Certified, non-netted cool season or Hybrid Bermuda sod as listed for the Washington DC metropolitan area.

5. INSTALLATION

5.5 Seeding

5.5.1 Seed bed shall consist of 2-3 inches of loose, friable, debris and weed free topsoil.

5.5.2 Cool season varieties shall be slit and broadcast seeded in two directions, totaling 20 lbs./1000sq.ft., to achieve even distribution. Starter fertilizer (1-2-1 ratio) at ½ lb. Nitrogen/1000 sq. ft., shall be applied at seeding. Hydro mulch or clean straw with tack shall be distributed uniformly over entire area. If seeded in late fall, turf blankets will be required.

5.5.3 Seeded Bermuda shall be broadcast in two directions, totaling 2lbs./1000sq.ft., using Green Sand as a carrier. Starter fertilizer (1-2-1 ratio) at ½ lb. Nitrogen/1000 sq.ft. shall be applied after germination. Light rolling shall be performed to assure adequate seed soil contact.

5.6 Sprigging

5.6.1 Seed bed shall consist of 2-3 inches of loose, friable debris free topsoil.

5.6.2 Hybrid Bermuda sprigs shall be distributed by sprigging machine or similar at 400-800 bushels/acre. Starter fertilizer (1-2-1 ratio) at ½ lb. Nitrogen/1000 sq.ft., shall be applied at sprigging. Light rolling shall be performed to assure adequate soil contact.

5.6.3 Light topdressing may be required to prevent sprig desiccation.

5.7 Sodding

5.7.1 Seed bed shall consist of 2-3 inches of loose, friable debris free topsoil.

5.7.1.1 Starter fertilizer (1-2-1 ratio) at ½ lb. Nitrogen/1000 sq.ft., shall be applied prior to sod installation.

5.7.2 Sod shall be cut no more than 24 hours in advance of installation. All sod delivered must be installed within this period.

5.7.3 Sod shall be of uniform ½ - 1" thickness, free of debris, holes or weeds. Large rolls shall be used and should be solid and tightly woven.

5.7.4 Unless sodding in dormant period, sod shall be have a healthy green color with adequate moisture in root zone.

5.7.5 Edges shall be butted tightly on all sides. Light rolling shall be performed to assure adequate soil contact and uniformity.

6. WATERING

6.5 Seed bed must maintain consistent moisture content, achieved by short repetitive intervals to assure germination (cool season 7-10 days; Bermuda 21 days). Excess water will deter germination or kill new seedlings.

6.6 At installation, sprigs and sod will require more water per interval. Water may be allowed to pool slightly.

6.7 Once germinated and/or roots develop, intervals should be spaced further apart with longer duration. Continued weaning is necessary to encourage deep roots. No pooling shall be visibly evident.

7. ESTABLISHMENT

7.5 Apply starter fertilizer (1-2-1 ratio) at 1 lb. Nitrogen/1000 sq.ft. 30 days after germination or installation. Weather conditions may dictate lesser Nitrogen rate. Contact PRCS Maintenance Division.

7.6 Sod may require additional rolling to achieve uniform surface.

7.7 Spaces between sod rolls shall be dressed with top dress mixture and/or similar seed mixture.

7.8 Turf shall be mowed at a minimum 3" height for cool season turf and 2" for Bermuda. No more than 1" of the leaf surface should be removed per cutting. Clippings should be left on the field, and not bagged.

7.9 Fertilization, ½ lb./1000 sq.ft. monthly, and watering should be continued until acceptance.

8. ACCEPTANCE

8.5 Field should be ready for play.

8.6 Seeded and sprigged fields shall have uniform 95% coverage of total area. No erosion should be seen. Turf is healthy, disease and weed free.

8.7 Sodded fields shall have uniform 100% coverage of total area. Turf is healthy, disease and weed free. Consistent deep root development is present.

SECTION 4.13 IRRIGATION SYSTEMS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of the installation, function, and acceptance of an athletic field irrigation system.

2.1.1 Design.

2.1.2 Installation.

2.1.3 Acceptance.

3. GENERAL REQUIREMENTS

3.1 Design for system should be presented to PRCS PM after water source (well preferred) and power source determined, but prior to installation.

3.2 Installation should not commence until design and final grade approved by PRCS PM and Maintenance Division manager.

4. DESIGN

4.1 Plan shall be designed to provide adequate water based on water volume available, distance from well, field sizes and quantity.

4.2 Shall be designed to provide easy turf maintenance to the fields, efficient valve and head placement, and coverage including the overrun areas.

4.3 Each field shall be zoned for individual use.

4.4 Backflow preventor, blowby valve, pressure regulator, etc., as required to maintain system operation.

5. MATERIALS

5.1 Controller – shall be Toro Sentinel or similar. Must offer remote access/programming capability via phone line, radio control onsite and additional zone capacity.

5.2 Heads – shall be Hunter I25 or similar, as well as, conform to industry standard design principals.

5.3 Valves – Hunter PGV or similar

5.4 Pipe and fittings – shall be minimum of schedule 40 PVC. Cleaned and glued to industry standards.

5.5 Wire - **X** gauge individually coated copper

6. INSTALLATION

6.1 Main lines shall be trenched, minimum 18" deep, from water source to each valve.

6.1.1 Wires shall be bundled and placed uniformly along side of pipe. Ditches shall be backfilled with clean material, no rocks larger than 2", and compacted with tamper.

6.1.2 Access through existing asphalt or concrete roadways and walkways shall be tunneled and sleeved rather than cut and repaired.

6.2 Valves shall be secured in center of standard valve box. Wire connections shall be made with water tight device and secured in an orderly fashion. Box shall be flush with surface and hand tamped.

6.3 Lateral lines may be pulled or trenched 18" deep and compacted with tamper.

6.4 Heads shall be installed onto swing joint and flush with surface. Area should be hand tamped.

6.5 Disturbed areas shall be repaired to equal the conditions prior to irrigation installation.

7. ACCEPTANCE

7.1 Upon completion, contractor shall review operating procedures, coverage areas, and turf conditions with PRCS Turfgrass Manager.

7.2 Contractor shall provide as-built plan, including wiring color code and zones. See AS-BUILT DRAWINGS, Section 2.07.

7.3 Contractor shall provide all equipment documentation and warranty information.

Roadway, Parking & Miscellaneous Paving

SECTION 5.01 ASPHALT PAVING

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This work consists of placing an asphalt concrete surface on all road and parking areas shown on the plans and specified herein.

3. MATERIAL

3.1 Aggregate base course shall be VDOT Type I, Grade 21A material.

3.2 Primer shall be low viscosity asphalt such as MC-30 or MC-70 and conform to VDOT Section 210.

3.3 Sand shall conform to VDOT Section 202.

3.4 Surface course shall be VDOT Section 211, Type SM-2A asphalt concrete.

4. CONSTRUCTION

4.1 Sub-grade shall be constructed in accordance with VDOT Section 305.

4.2 Aggregate base course shall be constructed in accordance with VDOT Section 309, to a depth of six (6) inches.

4.3 Primer shall be sprayed with a pressure distributor, under average conditions of accepted standards from 0.20 to 0.50 gallon per square yard on the prepared aggregate base course. The asphalt shall be entirely absorbed by the base course. If it is not absorbed within 24 hours after application, sand shall be spread over the surface to blot the excess asphalt. Care shall be taken to prevent over priming. The prime shall be fully set and cured before placing the surface treatment.

4.4 Surface course shall be constructed in accordance with VDOT Section 315 to a depth of two (2) inches. Compaction and rolling shall comply with VDOT Specifications.

SECTION 5.02 PRE-CAST CONCRETE WHEEL STOPS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of providing all labor, materials and services necessary for the installation of all pre-cast concrete wheel stops and reinforcing bar anchors.

3. MATERIALS

3.1 Pre-cast concrete wheel stops shall be utilized.

3.1.1 Handicap space: 8’ 0”.

3.1.2 Regular space adjacent to handicap aisles space: 8’ 0”.

3.1.3 Regular space: 6’ 0”.

3.2 Holes, 5/8 inch in diameter, for the wheel stop anchors shall be pre-formed, approximately nine to twelve inches from each end, during the manufacture of the wheel stop. Wheel stop anchors shall be 1/2” O.D. reinforcing bar, 2’6” in length and shall conform to Section 228 of the VDOT Specifications.

3.3 The wheel stop shall be fabricated with two continuous #4 deformed steel bars.

3.4 The concrete shall have a 28-day compressive strength of 4000 PSI and a smooth finish.

4. INSTALLATION

4.1 Wheel stops shall be located as shown on the plan and detail. Wheel stop anchors shall be driven into the pavement until the top of the anchor is flush with the top of the wheel stop.

SECTION 5.03 ROAD AND PARKING ACCESSORIES

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. DESCRIPTION OF THE WORK

2.1 This section specifies materials and work required to apply, install and construct miscellaneous road and parking accessories.

3. STANDARDS

3.1 Western Wood Products Association (WWPA).

3.2 Southern Pine Inspection Bureau (SPIB).

3.3 American Wood Preservers Association (AWPA).

4. SUBMITTALS

4.1 Products

4.1.1 Submit manufacturer's specifications and application instructions for pavement marking removal paint and pavement marking paint, steel gate post paint and wood bollard treatment preservative.

4.1.2 Submit manufacturer's descriptive literature for pre-cast concrete wheel stops and road and parking area signs.

5. PRODUCT DELIVERY, STORAGE AND HANDLING

5.1 Deliver paint to project site in original unopened containers bearing manufacturer's label.

5.2 Store paint in tightly covered containers.

6. PROJECT CONDITIONS

6.1 Maintain vehicular and pedestrian traffic during pavement marking operations. Do not apply paint when ambient air temperature is below 50 degrees F, relative humidity exceeds 85 percent, wind exceeds 20 miles per hour, or pavement surface temperature is below 50 degrees F.

7. PRODUCTS

7.1 Pavement Marking: AASHTO M 248, type I white, non-reflectorized paint. (VDOT Section 246.02). PRCS shall approve materials prior to installation.

7.2 Pre-cast Concrete Wheel Stops:

7.2.1 In accordance with CONCRETE WHEEL STOPS, Section 5.02.

7.3 Steel Gate Posts:

7.3.1 Posts: Seamless steel tubing ASTM A 501, round, six (6) inch diameter.

7.3.2 Post Fill: Class A Portland cement concrete.

7.3.3 Post Paint: Shop prime, AASHTO M 72 type I. Finish paint, AASHTO M 67-74, foliage green/black, type I.

7.3.4 Posts Hardware: ⅜ inch eye bolt, length required for installation indicated, and ⅜ inch washers both with zinc coating finish, ASTM A 153.

7.4 Road and Parking Area Signs

7.4.1 Accessible Parking Area and Fire Lane Signs: in accordance with Loudoun County standards specified and as indicated.

7.5 Parking Space Signs:

7.5.1 Accessible Parking

7.5.2 No Parking Fire Lane

7.5.3 Van Accessible Parking

7.6 Sign Posts: Wood posts shall be nominal 4" x 4" exterior grade, no. 2 or better, free of splinters, smooth cut, pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 236 and 418 of the VDOT Specifications. All fabricating, cutting, boring and trimming shall be done prior to preservative treatment. Top of post shall be pyramidal cut.

7.7 Miscellaneous Products:

7.7.1 Concrete: VDOT Class A3 general use.

8. EXECUTION

8.1 PAVEMENT MARKING

8.1.1 Surface Preparation: Clean pavement surfaces, removing grease, oil, mud and foreign materials.

8.1.2 Preparation for New Pavement Markings: Lay out markings to dimensions and line widths indicted and specified. Allow bituminous concrete pavement to cool and set five (5) calendar days prior to paint application. Do not apply marking materials to wet or damp pavement surfaces. Do not apply marking materials until pavement marking removal paint has set and hardened. Allow surfaces to set an additional eight (8) hours after appearing dry.

8.1.3 Application: VDOT Section 704 and as noted. Apply paint to width and length of pavement marking lines indicated, and as noted. Apply paint with conventional traffic line stripping equipment, and in accordance with the procedures and application rates detailed in VDOT Section 704.03, and paint manufacturer's recommendations, to produce markings parallel and with sharp line edges, uniform in cross section and with line widths as indicated or specified.

8.1.3.1 Lay out and apply paint for universal accessibility space symbols in accordance with standard practice and as directed by PRCS.

8.1.3.2 Protection and Restoration: Protect completed paint marking from damage. Do not permit vehicular or pedestrian traffic on completed marking until paint has set and hardened. Restore damaged paint marking as directed by PRCS.

8.2 PRECAST CONCRETE WHEEL STOPS

8.2.1 Lay out wheel stops to locations indicated. Drive anchors plumb and flush with top of wheel stop.

8.3 STEEL GATE POSTS

8.3.1 Lay out posts to locations indicated. Excavate footing to dimensions and depth indicated. Place and consolidate post in excavation. Install post in concrete plumb to ¼ inch in ten (10) feet and depth indicated. Provide bracing to prevent movement. Slope concrete surface one, with outside edges flush with finished grade, and trowel to smooth finish. Fill post with concrete as indicated. Contractor shall allow concrete footings to cure a minimum of 14 calendar days before removing bracing.

8.3.2 Post Paint: Clean and prepare surfaces in accordance with paint manufacturer's recommendations. Apply one (1) primer coat and one (1) finish coat in accordance with manufacturer's application instructions.

8.3.3 Hardware: Drill eye bolt holes and install as indicated. Center punch eye bolt ends to prevent nut loosening. Install chain between posts with two (2) round pin chain shackles and chain lock. Chain shall be of correct length for post spacing indicated, plus catenary curve sag not exceeding 10 inches, plus 12 inches for chain adjustments.

8.3.4 Sign Location: Locations of various sign types shall be as indicated on Construction Drawings (Accessible Signs) (No Parking) and as directed by PRCS (all other types). Contractor shall provide and install indicated and selected signs at no increase to Contract Sum.

8.3.5 Post Installation: Excavate post footings to 12 inch diameter and 30 inch depth. Place and consolidate concrete in footing excavation. Install post and assembled sign in concrete plumb to ¼ inch in 10 feet and 24 inch depth. Provide bracing to prevent movement. Slope concrete surface one inch with outside edges flush with finished grade and trowel to smooth finish. Contractor shall allow concrete footings to cure a minimum of 14 calendar days before removing bracing.

SECTION 5.04 GRAVEL PARKING

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

The work consists of the construction of a gravel parking surface.

2.1 Excavation

2.2 Subgrade preparation

2.3 Installation of gravel

2.4 Installation of pre-cast concrete wheel stops.

2.5 Finish grading

3. GENERAL REQUIREMENTS

3.1 The use of alternative porous subbase materials shall be considered to maintain a dust-free environment and reduce future maintenance costs. Materials shall be coordinated with PRCS for feasibility and site adaptability.

3.2 Construction of the parking areas shall be done only after excavation and construction work which might damage them has been completed. Damage caused during construction shall be repaired before acceptance by PRCS.

3.3 The Contractor shall stake the parking lot limits for approval by PRCS prior to construction.

3.4 Existing parking areas shall, if damaged or removed during course of this project, be repaired or replaced under this section of the specification. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work.

4. MATERIALS

4.1 Aggregate course shall be VDOT Type I, Grade No. 21A material.

4.2 Pre-cast concrete wheel stops shall be supplied for all existing and new spaces in accordance with the PRE-CAST CONCRETE WHEEL STOPS section (5.02) contained herein.

5. CONSTRUCTION

5.1 Clearing

5.1.1 Areas to be paved shall be cleared of all roots, sod, mulch and other debris not part of the soil, to a depth of at least one foot below finished grade.

5.2 Subgrade Preparation

5.2.1 Subgrade shall be constructed in accordance with VDOT Section 305.

5.2.2 The Contractor shall notify PRCS if the sub-grade is found to be unsuitable for adequate leveling and compaction due to moisture content or other conditions.

5.2.3 Existing subgrade material that will not readily compact as required shall be removed and replaced with satisfactory material. Additional material needed to bring sub-grade to required line and grade and to replace unsuitable material removed shall conform to this section.

5.2.4 Excavation required in the subgrade shall be completed before fine grading and compaction are performed. When excavation must be performed in completed subgrade, subsequent backfill and compaction shall be performed as directed by PRCS. Completed subgrade, after filling and compaction, shall be uniformly and properly graded and have a uniform stable density.

5.2.5 Material shall not be stored or stockpiled on prepared subgrade.

5.2.6 Disposal of debris and other material excavated and/or stripped under this section, and material unsuitable for or in excess of requirements for completing work of this section shall be disposed of offsite by the Contractor.

5.2.7 Graded and compacted subgrade shall be approved by PRCS before placement and preparation of the aggregate.

5.3 Aggregate Course

5.3.1 Construction of the aggregate course shall be in accordance with VDOT Section 309.

5.3.2 The aggregate base course shall not be placed on muddy or frozen subgrade.

5.3.3 The compacted aggregate course depth shall be a minimum of six (6) inches.

5.3.4 Aggregate material that will not readily compact as required shall be removed and replaced with satisfactory materials. Additional materials needed to bring base course to required line and grade and to replace unsuitable material removed shall conform to this section.

5.3.5 Aggregate used to stabilize poor sub-grade conditions shall be applied in lifts less than or equal to six inches thick, compacted measure. Each lift shall be separately compacted to the specified density.

5.3.6 Surface irregularities which exceed one (1) inch as measured by means of a 10-foot long straightedge, shall be replaced and properly compacted.

5.3.7 The subgrade and base course shall be kept clean and uncontaminated. Less select materials shall not be permitted to become mixed with gravel. Materials spilled outside pavement lines shall be removed and the area repaired.

5.3.8 All drainage pipe and structures shall be placed in conjunction with the gravel course application as located on the plans. Pipe shall be installed and completely covered by compacted gravel.

SECTION 5.05 BRICK PAVERS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct brick paved walks, including subgrade and base preparation.

3. SUBGRADE

3.1 The subgrade shall be prepared in accordance with the requirements of the ROUGH AND FINE GRADING, Section 3.02. Any deterioration of originally prepared subgrade shall be repaired to the specified condition before proceeding with construction.

4. MATERIALS

4.1 Bricks - Shall be manufactured from extruded fire clay or shale and shall be fired to produce a dense paver with an average absorption of less than 4% (in a 24 hour cold water absorption test) and have an average compressive strength of not less than 10,500 PSI for any five bricks tested. The pavers must be capable of withstanding at least the equivalent of 100 cycles of freeze thaw conditions. The permissible tolerance for individual pavers shall conform to ASTM Designation C-902-79a. Brick size shall be 2-1/4 inches thick x 4 inches wide x 8 inches long. Paver color shall be coordinated with the PRCS Project Manager.

4.2 Sand - Shall conform to ASTM C-33.

4.3 Joint Filler - Shall be coordinated with the PRCS Project Manager.

5. PAVER INSTALLATION

5.1 Compacted Gravel Base: Grades shall be as shown on plan. Thickness of compacted gravel base will vary with type of soil subgrade and climate, but shall be a minimum 4" thickness. Place geotextile over compacted gravel base. Place minimum of 1" of bedding sand over geotextile. Carefully set pavers by hand with tight joints and uniform top surface. The pattern shall be as shown on the plans. Unless otherwise approved by PRCS, joints are to be hand tight sand swept joints. Sweep a dry mixture of one part colored Portland cement (color to match pavers) and three parts sand until joints are completely filled. Fog lightly with water. Cement stains that remain shall be cleaned.

5.2 Pavers and bedding sand can be placed over an asphalt or concrete base.

SECTION 5.06 WOOD GUARDRAIL

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of, but is not limited to, the provision of all labor, materials, services, and equipment necessary to construct the wood guardrail.

3. MATERIALS

3.1 Structural lumber shall be exterior grade, smooth cut, pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 236 and 418 of the VDOT Specifications. Sizes shall be per the plan.

3.2 Preservative for lumber shall conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type.

3.3 Penetration of preservative for lumber shall conform to Section 236 of the VDOT Specifications.

3.4 All lumber shall be subject to inspection at the treating plant prior to treating.

3.5 All hardware shall be double dipped galvanized where specified and shall conform to VDOT Section 418.

3.6 Carriage bolts shall be double dipped galvanized 5/8 inch x 10 inch. Washers shall be included.

3.7 Mowing Strip. See Paragraph 5.5 of this Section.

3.8 Blanket Liner: Shall be 6 mil polyethylene or approved equal

3.9 Base Course: Shall be 4 inches of compacted VDOT Type I Grade 21A.

3.10 Surface Course: Shall be 2 inches of compacted VDOT Grade 10 material.

4. STAKE-OUT

4.1 The Contractor shall be responsible for staking out the work, using the information provided on the plan. Before construction begins, the stake-out shall be approved by PRCS.

5. CONSTRUCTION

5.1 The wood guardrail shall be constructed according to the layout on the plans and Details LS-9.0 and LS-9.1. The Contractor shall stake the location for the guardrail for approval by PRCS prior to construction.

5.2 Posts shall be six (6) feet in length with ½" beveling at top of post to drain water off top, set three (3) feet in the ground. Each bollard shall be centered plumb in an 18 inch diameter post hole and direct buried with compacted backfill. Backfill within six (6) inches of base of bollard shall be crowned ½ inch.

5.3 Exposed edges of each beam shall be rounded as shown on the drawings. Bolt ends shall be peened after posts and beams have been assembled. Asphalt concrete shoulder shall extend to minimum of twelve inches behind all posts.

5.4 All material excavated during the construction of the guardrail and mowing strip shall be removed from the site at the expense of the Contractor.

5.5 Mowing Strip

5.5.1 Excavation: In the areas to be graveled, as indicated on plan, all soil, sod, roots, etc. shall be removed to a depth of six (6) inches below finished grade. Fill and grade with materials as specified.

5.5.2 Blanket liner shall be installed on three (3) sides of the trench and extend up the trench side wall to the top of the VDOT 21A gravel. Liner shall be sliced to allow drainage.

SECTION 5.07 WOOD PARKING BOLLARD

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The Contractor shall provide all labor, materials, services, and equipment necessary to construct the wood parking bollards and all related items as shown on the drawings and specified herein.

3. MATERIALS

3.1 Structural lumber shall be exterior grade, smooth cut; pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 236 and 418 of the VDOT Specifications.

3.2 Preservative for lumber shall be conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type

3.3 All lumber shall be subject to inspection at the treating plant prior to treating.

3.4 All bolts, nuts, and other hardware shall be double dipped galvanized where specified and shall conform to Section 418 of the VDOT Specifications.

3.5 Concrete for footings shall be Class "B" concrete according to CAST IN PLACE CONCRETE, Section 6.05.

4. EXECUTION

4.1 Parking bollards shall be constructed according to layout on drawings.

4.2 Concrete for footings shall be installed in accordance with CAST IN PLACE CONCRETE, Section 6.05..

4.3 Exposed edges of each beam shall be rounded as shown on the drawings.

4.4 Bolt ends shall be peened after posts and beams have been assembled.

4.5 Asphalt concrete shoulder shall extend a minimum of six (6) inches behind all posts.

SECTION 5.08 REMOVABLE LOCKING BOLLARD

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of furnishing all labor, materials and equipment necessary to construct the removable steel locking bollards and all related items as shown on the drawings and specified herein.

3. MATERIALS

3.1 Rectangular Steel Tubing shall conform to ASTM 333, Grade 1, standard weight (schedule 40).

3.2 Steel Hasp/Shapes - Shall conform to ASTM A283 and be galvanized.

3.3 All Bolts, Nuts and Other Hardware - Shall be galvanized and shall conform to Section 423.02, Article (d) of VDOT Specifications.

3.4 Concrete for Footings - Shall be Class "B" concrete.

3.5 Paint Primer - Shall be two (2) coats of zinc chromate paint.

3.6 Paint - Shall be two (2) coats of Forest Green alkyd enamel paint. Color to be approved by PRCS.

3.7 Reflective tape shall be silver, or white. PRCS shall approve tape.

4. METHOD OF CONSTRUCTION

4.1 Removable locking bollard shall be constructed in accordance with the layout indicated on the plans.

4.2 Concrete for footings shall be poured in accordance with the requirements outlined in CAST IN PLACE CONCRETE, Section 6.05.

4.3 Top of bollard shall have a cap continuously welded on all four (4) sides.

4.4 Reflective tape shall be applied and detailed as indicated.

4.5 All removable locking bollards shall have a minimum of six (6) inches pavement around all posts.

4.6 All welds shall be ground smooth. See VDOT specifications, Sections 414.04 and 414.08 for preparation of metal surfaces and weather limitations.

4.7 All chips and dings on painted surfaces shall be touched up with two (2) coats of primer and two (2) coats of paint prior to acceptance.

Fencing & Landscaping

SECTION 6.01 GENERAL FENCING AND GATES

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of providing all labor, materials, equipment and services necessary to install fencing including necessary gates, terminal posts and fittings as shown on the drawings and specified herein.

3. MATERIALS

3.1 The fence shall be a standard manufactured item. It shall be constructed as shown on the approved drawings. The materials shall be as follows:

3.2 Line or intermediate post - 2½" OD, 3.65 lbs./ft. vinyl coated pipe.

3.3 Terminal (corner end and pull) post - 3" ID, 5.79 lbs./ft. vinyl coated pipe.

3.4 Gate post - 6 5/8" OD, 18.97 lbs./ft. vinyl coated pipe.

3.5 Top rail - 1 5/8" OD, 2.27 lbs./ft. vinyl coated pipe.

3.6 Corner and gate horizontal brace - 1 5/8" OD, 2.27 lbs./ft. vinyl coated pipe.

3.7 Chain link fabric - 9 gauge, 2" mesh, vinyl coated, knuckled selvage top and bottom. Base shall be commercial quality steel wire.

3.8 Bottom wire - #7 coil spring, vinyl coated wire.

3.9 Corner and gate post tops – Vinyl coated, malleable iron aluminum sand castings.

3.10 Fabric ties - Vinyl coated wire of approved gauge and design.

3.11 Gate frames - 3' wide, 1 5/8" OD, 1.27 lbs./ft. vinyl coated pipe. 10'-13' wide, 2" OD, 2.72 lbs./ft. vinyl coated pipe.

3.12 Internal bracing - 3' wide, none. 10'-13' wide, 1 5/8" OD, 2.27 lbs./ft. vinyl coated pipe.

3.13 Miscellaneous fittings shall be those which are necessary to make a complete installation.

4. VINYL FABRIC

4.1 Vinyl coated chain link fabric will be woven out of wire with a core of galvanized steel to which a 7 mils coating of polyvinyl chloride (PVC) has been bonded by the thermal fusion method. The vinyl in the coating will be applied free of blisters. The bond between the vinyl coating and the steel wire will be equal or greater than the cohesive strength of the vinyl. The color of the coating will be green/black as approved by PRCS.

4.2 Tension wire will be vinyl coated in the same manner as the chain link fabric. The color of the coating will match the fabric.

4.3 The framework consisting of terminal posts, line posts, corner posts, top rails, braces, and gate frames will be coated with a PVC coating which has been bonded to the metal surface using the thermal fusion method. The thickness of the PVC coating will be 10 to 15 mils. The vinyl shall be plasticized and thoroughly compounded so there are no undispersed pigments, stabilizers, or other discrete particles present. The color will match the fabric.

4.4 All fixed component parts: post tops, bands, connectors, and rail ends will be galvanized on all surfaces. Only the visible surfaces will be vinyl coated. All threaded parts will be coated in the field with a PVC based compound after installation. The color will match the fabric.

5. SHOP DRAWINGS

5.1 Shop drawings shall be provided to PRCS, for approval, prior to fabrication and construction.

6. INSTALLATION

6.1 Line posts shall be set approximately 3'-0" below finished ground level. They shall be spaced in the line of fence at a maximum of 10'-0" apart.

6.2 Terminal (corner, end and pull) posts shall be set 3' - 0" below finished grade. Line and terminal posts shall be set in cylindrical concrete foundations. The hole for the concrete footings shall be 6" deeper than the bottom of the posts and a minimum of 12" in diameter.

6.3 Gate posts shall be set approximately 42" below finished grade, in a hole 24" x 24".

6.4 Top rails shall be furnished in random lengths averaging not less than 20' and joined with extra long pressed steel sleeves providing a rigid connection but allowing for expansion and contraction.

6.5 All corner and gate posts shall be braced by a horizontal pipe securely attached to corner and first line posts with malleable iron or aluminum sand cast fittings, leveled edge bands and truss braced with 3/8" rod and take-up.

6.6 The fabric shall be place on the inside of the fence. It shall be fastened to the line posts at intervals not greater than 24". The fabric shall be securely clipped to the top rail and bottom reinforcing wire at intervals not greater than 18".

6.7 The bottom of the fabric shall be approximately 1" above the finished surface.

SECTION 6.02 SPLIT RAIL FENCE

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Split Rail Fence.

2.1.2 Excavation, compaction, backfill, fine grading and stabilization.

3. MATERIALS

3.1 The fence shall be a standard manufactured item. It shall be a three (3) rail wooden fence of the "split-rail" or "rustic" style. It shall be 3'-6" high to top of rail as shown and the materials shall be as follows:

3.2 Line (or intermediate) post shall be approximately 5" diameter.

3.3 Terminal (corner, end, gate) post shall be one (1) size larger than line post (approx. 6" diameter), minimum 6'-6" in length.

3.4 Rail shall be approximately 4" diameter split rail #1 spruce, approximately 11'-0" in length (unless otherwise indicated on plan). Rails shall have narrowed ends approximately 3" in diameter and 6" in length.

3.5 All rails and posts shall be pretreated with preservative conforming to AWPA P5 Standards.

4. INSTALLATION

4.1 Line posts shall be spaced in the line of the fence 8’-0” apart on center unless otherwise indicated on the plan.

4.2 Posts shall be set in an augured hole to a minimum depth of 2'-6". The hole shall be sized a minimum 1'-0" larger than the diameter of the post to provide adequate space for tamping and compacting the backfill. It is important that lifts of the fill be limited to 0'-6" in loose thickness and that all fill be well tamped. Backfill shall be compacted to 90% density at optimum moisture content.

SECTION 6.03 THREE BOARD FENCE

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.1.1 Three (3) board fence.

2.1.2 Excavation, compaction, backfill, fine grading and stabilization.

3. MATERIALS

3.1 The fence shall be a standard manufactured item. It shall be a two three board rail wooden fence of the paddock "split-rail" or "rustic" style. It shall be 3'-6" high to top of rail as shown and the materials shall be as follows:

3.2 Line (or intermediate) post shall be 3/4 round, approximately 5" diameter.

3.3 Terminal (corner, end, gate) post shall be round posts, one size larger than line post (approx. 6" diameter), minimum 6'-6" in length.

3.4 Rail shall be 1” x 6” x 16’ rough-sawn oak boards.

3.5 Finish shall be Cabot ‘Deep Forest Green’ Solid Color Decking Stain with #1806 Neutral Stain Base, Behr ‘Forest’ Solid Color House & Fence Stain with #30 Tint Base, or equivalent.

4. TREATMENT

4.1 Preservative: All rails and posts shall be treated with preservative conforming to AWPA P5 Standards.

5. INSTALLATION

5.1 Line posts shall be spaced in the line of the fence 8’-0” apart on center unless otherwise indicated on the plan.

5.2 Posts shall be set in an augured hole to a minimum depth of 2'-6". The hole shall be sized a minimum 1'-0" larger than the diameter of the post to provide adequate space for tamping and compacting the backfill (add text on sac-crete). It is important that lifts of the fill be limited to 0'-6" in loose thickness and that all fill be well tamped. Backfill shall be compacted to 90% density at optimum moisture content.

SECTION 6.04 DRY STACK RUBBLE STONE WALL

1. GENERAL

    1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

    2.1 Contractor shall provide all labor, materials, equipment and services necessary to construct a small stone wall as shown on the plans and as specified herein.

3. SUBMITTALS

    3.1 Contractor shall provide PRCS with stone material submittals for review and approval by PRCS prior to installation.

4. INSTALLATION

    4.1 Contractor shall stake wall location for PRCS approval prior to installation.

SECTION 6.05 CAST-IN-PLACE CONCRETE

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

   2.1 Cast-in-place concrete.

   2.2 Floors and slabs on grade.

   2.3 Control, expansion and contraction joint devices associated with concrete work.

   2.4 Equipment pads and flagpole bases.

3. PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

   3.1 Concrete Formwork: Placement of joint control device(s) in formwork.

4. SUBMITTALS

   4.1 Submit under provisions of SUBMITTALS, Section 2.04.

   4.2 Product Data: Provide data on joint devices.

   4.3 Samples: Submit two (2) inch long samples of expansion/contraction joint and control joint.

   4.4 Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent Work.

5. PROJECT RECORD DOCUMENTS

   5.1 Submit under provisions of PROJECT MANAGEMENT, Section 2.01.

   5.2 Accurately record actual locations of embedded utilities and components which are concealed from view on as-built drawings.

6. QUALITY ASSURANCE

   6.1 Perform Work in accordance with VDOT Road and Bridge Specifications.

   6.2 Acquire cement and aggregate from same source for all work.

6.3 Conform to ACI 305R when concreting during hot weather.

6.4 Conform to ACI 306R when concreting during cold weather.

7. FIELD SAMPLES

7.1 Provide under provisions of QUALITY CONTROL, Section 2.03.

7.2 Construct and erect a field sample for architectural concrete surfaces receiving special treatment or finish as result of formwork when required by PRCS.

7.3 Sample Panel: Sufficient size to indicate special treatment or finish as required by PRCS.

7.4 If requested by PRCS, cast concrete against sample panel. Obtain acceptance of resultant surface finish prior to erecting formwork.

7.5 Locate where directed.

7.6 Accepted sample panel is considered basis of quality for the finished Work. Keep sample panel exposed to view for duration of concrete Work.

7.7 Accepted sample may remain as part of the Work.

8. COORDINATION

8.1 Coordinate Work under provisions of PROJECT MANAGEMENT, Section 2.01.

8.2 Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

9. PRODUCTS

9.1 CONCRETE MATERIALS

9.1.1 Cement: VDOT Section 214.

9.1.2 Formulated Latex Modifier: VDOT Section 217.

9.1.3 Fine and Coarse Aggregates: VDOT Section 217.

9.1.4 Water: VDOT Section 216.

9.2 ADMIXTURES

9.2.1 Air Entrainment: VDOT Section 215.

9.2.2 Water Reducing: VDOT Section 215.

9.2.3 Accelerating Admixtures: VDOT Section 215.

9.2.4 High-range Water-reducing and High-range Water Reducing and Retarding Admixtures: VDOT Section 215.

9.2.5 Calcium Chloride: VDOT Section 215.

9.2.6 Fly Ash, Calcinated Pozzolan: VDOT Section 241.

9.2.7 Granulated Iron Blast-Furnace Slag: VDOT Section 215.

9.3 ACCESSORIES

9.3.1 Bonding Agent: As required by PRCS.

9.3.2 Vapor Barrier: 6 mil thick clear polyethylene film or fabric reinforced plastic film, type recommended for below grade application.

9.3.3 Non-Shrink Grout: VDOT Section 218.

9.4 JOINT DEVICES AND FILLER MATERIALS

9.4.1 As required by VDOT Road and Bridge Specifications.

9.5 CONCRETE MIX

9.5.1 Mix and deliver concrete in accordance with VDOT Section 217.

9.5.2 Mix concrete in accordance with VDOT Section 217.09.

9.5.3 Provide concrete to the following criteria:

9.5.3.1 Unit Measurement
9.5.3.2 Compressive Strength (28 day) 3000 psi
9.5.3.3 Water/Cement Ratio (maximum) .49 by weight (lb./cu. yd.)
9.5.3.4 Aggregate Size (maximum) No. 57
9.5.3.5 Aggregate Size (Nominal Max.) 1 inch
9.5.3.6 Air Entrained 6 ± 2 percent
9.5.3.7 Slump - Plus or minus 1 inch 1-5 inches

9.5.4 Use accelerating admixtures in cold weather only when approved by PRCS. Use of admixtures will not relax cold weather placement requirements.

9.5.5 Use calcium chloride only when approved by PRCS.

9.5.6 Use set retarding admixtures during hot weather only when approved by PRCS.

9.5.7 Add air-entraining agent to normal weight concrete mix for work exposed to exterior.

10. EXECUTION

10.1 EXAMINATION

10.1.1 Verify site conditions under provisions of COORDINATION AND MEETINGS, Section 2.02.

10.1.2 Verify requirements for concrete cover over reinforcement.

10.1.3 Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

10.2 PREPARATION

10.2.1 Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

10.2.2 In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

10.3 PLACING CONCRETE

10.3.1 Place concrete in accordance with VDOT Section 217.

10.3.2 Notify PRCS minimum 24 hours prior to commencement of operations.

10.3.3 Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

10.3.4 Install vapor barrier under interior slabs on grade. Lap joints minimum six (6) inches and seal watertight by sealant applied between overlapping edges and ends.

10.3.5 Repair vapor barrier damaged during placement of concrete reinforcing. Repair with vapor barrier material; lap over damaged areas minimum six (6) inches and seal watertight.

10.3.6 Separate slabs on grade from vertical surfaces with one (1) inch thick joint filler.

10.3.7 Place joint filler in work as shown on approved drawings. Set top to required elevations. Secure to resist movement by wet concrete.

10.3.8 Extend joint filler from bottom of slab to within 1/2 inch of finished slab surface.

10.3.9 Install joint devices in accordance with manufacturer's instructions.

10.3.10 Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.

10.3.11 Install joint device anchors. Maintain correct position to allow joint cover to be flush with floor and wall finish.

10.3.12 Install joint covers in longest practical length, when adjacent construction activity is complete.

10.3.13 Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

10.3.14 Place concrete continuously between predetermined expansion, control, and construction joints.

10.3.15 Do not interrupt successive placement; do not permit cold joints to occur.

10.3.16 Place floor slabs in checkerboard pattern indicated.

10.3.17 Saw-cut joints within 24 hours after placing.

10.3.18 Screed floors and slabs on grade level, maintaining surface flatness of maximum 1/4 inch in 10 ft.

10.4 SEPARATE FLOOR TOPPINGS

10.4.1 Prior to placing floor topping, remove deleterious material. Broom and vacuum clean.

10.4.2 Place required dividers, edge strips, or reinforcing and other items to be cast-in.

10.4.3 Apply bonding agent to substrate in accordance with manufacturer's instructions.

10.5 CONCRETE FINISHING

10.5.1 Provide formed concrete surfaces to be left exposed with finish as scheduled.

10.6 CURING AND PROTECTION

10.6.1 Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

10.6.2 Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

10.7 PATCHING

10.7.1 Allow PRCS to inspect concrete surfaces immediately upon removal of forms.

10.7.2 Excessive honeycomb or embedded debris in concrete is not acceptable. Notify PRCS upon discovery.

10.7.3 Patch imperfections as directed.

10.8 DEFECTIVE CONCRETE

10.8.1 Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

10.8.2 Repair or replacement of defective concrete will be determined by PRCS.

10.8.3 Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of PRCS for each individual area.

SECTION 6.06 CONCRETE

1. GENERAL

1.2 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This work consists of placing a building slab-on-grade, sidewalk, aprons, abutments, back stop, and bench pads as shown on the plans and specified herein.

3. MATERIAL

3.1 Hydraulic cement concrete shall conform to VDOT Section 217. Concrete placed in building slab-on-grade shall be Class A4-General.

3.2 Steel reinforcement shall conform to VDOT Section 223, Deformed bars, Grade 60.

4. CONSTRUCTION

4.1 Concrete shall be constructed in accordance with VDOT Section 502, Incidental Concrete Items.

4.2 Notify PRCS minimum 24 hours prior to commencement of operations.

4.3 Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

4.4 Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

4.5 Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

4.6 Excessive honeycomb or embedded debris in concrete is not acceptable.

SECTION 6.07 LANDSCAPE AND SITE STANDARDS

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

   1.2 Priorities for landscape design program are; site safety, site function, ease of maintenance and satisfaction of zoning requirements.

2. TREE PRESERVATION

   2.1 Preservation of existing trees and natural areas is strongly encouraged.

   2.2 Site survey, fencing and other preservation activities shall conform to standards in the Virginia Erosion and Sedimentation Control Handbook and Sections 7.300 of the Loudoun County Facilities Standards Manual.

   2.3 Where site size or project budget does not allow for proper tree preservation activities; eliminate existing trees that cannot be properly preserved.

3. GRADING

   3.1 Gradients for planted or mowed areas shall not exceed 3:1. Gradients of less than 2% should be avoided.

   3.2 These areas shall be contoured gently, avoiding abrupt transitions in grade.

   3.3 Graded contours should appear similar to the surrounding natural landscape.

4. PLANT SELECTION

   4.1 Use plant species suited to site conditions; chosen from the Plant Palette Standards in Appendix A.

   4.2 Use of species not on Plant Palette Standards list must be approved by PRCS.

   4.3 Species diversity is encouraged. Use of more than 10% of any species or 20% of any genus should be avoided.

   4.4 Avoid bee-attracting plants near walkways or seating areas.

   4.5 Installed size of trees and shrubs shall conform to the Revised Loudoun County Zoning Ordinance, Sections 1300 and 1400.

5. PLANTING LAYOUT:

5.1 Plants shall be located so that, at mature size, they will not conflict with any structure, fixture or paved area.

5.2 Avoid utility easements when placing plants.

5.3 Locate plants at an on-center distance to allow them to slightly touch at maturity.

5.4 Trees and shrubs shall be shown at mature size on graphic plans.

5.5 Provide unplanted access-ways for maintenance (at least 2’ wide when plants are mature) along walls and fences.

5.6 Where open lines of sight are needed (e.g., in a parking lot), use no species having a mature height between 3’ and 20’.

5.7 No planting or turf areas shall be located under roof overhangs that extend more than 18".

5.8 Minimize use of turf or other plantings where vehicle overhang will occur.

5.9 Minimum size of tree or shrub beds within paved areas is 7’x7’ in pedestrian areas; 9’x9’ in parking lots and roads.

5.10 Turf strips adjacent to pavement should be 4’ or wider.

5.11 Please address site irrigation needs. If budget allows, provide yard hydrants or other access to irrigation for the landscape.

5.12 Information shown in landscape plan details and notes shall agree with standards in this document.

5.13 Paved or compacted bluestone pads shall be installed under benches, picnic tables, trash receptacles, fencing, bollards, guardrails, and other site furnishings.

SECTION 6.08 LANDSCAPE INSTALLATION

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This Section includes specifications for: Trees, shrubs, turf, ground covers and herbaceous perennials.

2.2 Related Chapters:

2.2.1 Chapter 2, PROJECT MANAGEMENT – Note coordination and submittals requirements

2.2.2 Chapter 3, SITE PREPARTION AND EARTHWORK – Note specifications for soil materials, backfill, protection of trees to remain, progress cleaning and rough and fine grading.

3. MATERIALS

3.1 Provide submittals for all plants, seed and materials to PRCS as required in Chapter 2, PROJECT MANAGEMENT.

3.2 Packaged material should be delivered to site containers showing weight, analysis, and name of manufacturer. Protect plants and materials from damage and deterioration during delivery and while stored at site.

3.3 Nursery Stock

3.3.1 Trees, shrubs and herbaceous perennials should comply with size, genus, species, and variety specified on approved plans. Any substitutions should be approved by PRCS.

3.3.2 Size and quality measurements of trees and shrubs should comply with ANSI Z60.1 "American Standard for Nursery Stock."

3.4 The root flare of trees and shrubs should be visible or evident at the top of the root ball or the container.

3.5 Plants should be vigorous, healthy and free of insects and disease. Trunks and branches of trees and shrubs should be free of injury and mechanical damage.

3.6 Turf and Grasses

3.6.1 Seed should be delivered in original sealed, labeled, and undamaged containers.

3.6.2 Seed quality should comply with tolerances for purity and germination established by Official Seed Analysis of North America. Seed mixture shall have minimum purity of 98% and minimum germination of 90%. Seed should be "Blue Tag" certified by the Virginia Crop Improvement Association.

3.6.3 Seed mix should include cultivars chosen from latest recommendations from Virginia Tech, in the following mixtures: Turf in sunny and part-shade areas – 80-90% Turf-Type Tall Fescue – at least three (3) cultivars in equal percentages (currently acceptable cultivars include: Avenger, Endeavor, Masterpiece and Raptor) and 10-20% Perennial Ryegrass (Applaud, Catalina II, and Inspire are some currently acceptable cultivars). Turf in shade – 100% Fine Fescue – at least two (2) cultivars in equal percentages (currently acceptable cultivars include: Berkshire, Chariot and Longfellow II).

3.6.4 Sod should be harvested, delivered, stored, and handled according to the current standards of the American Sod Producers Association's (ASPA) "Specifications for Turfgrass Sod Materials and transplanting/Installing."

3.6.5 Sod should be at least two (2) years old, healthy, vigorous, free of weeds and undesirable grasses, and machine cut to pad thickness of ¾" (plus or minus ¼"), excluding top growth and thatch. Sod should be composed principally of following: 90% Turf-Type Tall Fescue and 10% Kentucky Bluegrass, and should be "Blue Tag" certified by the Virginia Crop Improvement Association.

3.7 TOPSOIL IN DISTURBED AREAS

3.7.1 Topsoil should be clay-loam, with a pH range of 5.5 to 7and contain 2% minimum organic material. It should be free of stones 1" or larger in any dimension, and other extraneous materials harmful to plant growth. Surface soil can be re-used, if suitable.

3.7.2 Submit soil test results to PRCS to verify suitability of existing and imported materials to be used as topsoil.

3.8 SOIL AMENDMENTS

3.8.1 Leaf compost: Fine granular texture.

3.8.2 Pine-bark fines.

3.8.3 Ground Limestone: Minimum 50% total oxides of calcium and magnesium, 50% passing through size 100 mesh and 98% through size 20 mesh.

3.8.4 Fertilizer: Agricultural grade 10-10-10 or slow-release, at least 35%WIN.

3.9 MULCH AND EROSION-CONTROL MATERIALS

3.9.1 Trees, shrubs and beds.

3.9.1.1 Shredded pine bark.

3.9.1.2 Composted wood chips.

3.9.2 Seeded areas

3.9.2.1 Straw

3.9.2.2 Biodegradable wood excelsior or coconut-fiber mat (enclosed in a photodegradable plastic mesh), untreated woven jute fabric. Include manufacturer's recommended steel wire staples, 6” long.

3.10 STAKES AND GUYS

3.10.1 Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2” by 2” length indicated, pointed at one end.

3.10.2 Guy and tie wire: ASTM A 641, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106” in diameter.

3.10.3 Bark chafing guard: Woven textile straps, at least 1” wide, for attaching staking wires to tree trunks.

4. EXECUTION

4.1 SOIL PREPARATION

4.1.1 Ensure that topsoil is present to a depth of 4" in turf areas and 6" in tree, shrub and other planting areas. If existing soil does not meet specifications, it may be amended; or it may be replaced with imported topsoil.

4.1.2 Where rock, impermeable clay or unsuitable materials are encountered in tree or shrub planting areas, the materials should be removed to a depth of 18", and replaced with suitable soil. Where plantings are to be installed in groups, unsuitable materials should be removed from the entire area, not individual planting holes.

4.1.3 Existing topsoil in turf and planting areas should be loosened by disking, tilling, subsoiling or an equally effective method. Stones larger than 1" in any dimension should be removed from loosened soil, along with sticks, roots, rubbish and other extraneous materials.

4.2 PLANTING TREES AND SHRUBS (Reference details LS–1.0, LS–2.0, LS–3.0)

4.2.1 Planting holes should be excavated so that sides slope outward at least 45 degrees from a vertical line at the center of the excavation. For trees, excavate so that top of hole is a minimum of 18" wider than ball or container on all sides; for shrubs, 12". Excavation depth should be equal to distance from root flare to base of ball or container.

4.2.2 Installed plants should be set plumb and in center of excavation with root flare at or slightly above adjacent finish grades.

4.2.3 Burlap, rope, twine and wire baskets should be removed from tops of balls and at least half of the sides.

4.2.4 Matted or girdling roots and those growing across top of root ball are likely to interfere with future growth, and should not be present.

4.2.5 Backfill around ball should be free of voids and air pockets.

4.2.6 No soil saucer should be present around excavation, except on downhill side of extreme slopes. Top surface of root ball shall remain free of any backfill or other soil. When planting is complete, no backfill soil shall be higher than surrounding, undisturbed grade. Excess soil should not be present in planting area.

4.2.7 When stock is planted on an extreme slope, form 3-6" high saucer, using backfill soil, on downhill side only, outside excavated area.

4.2.8 No pruning should be done except to remove broken branches. When removing broken branches, pruning cuts shall be made outside branch collar.

4.3 TREE AND SHRUB GUYING AND STAKING

4.3.1 Stake trees of less than 3" caliper only as required to prevent wind tip-out. Trees of 3-6" may be staked. Use a minimum of 2 stakes of length required to penetrate at least 18" below bottom of backfilled excavation and to extend at least 60" above grade. Avoid penetrating balls or root masses. Support trees with two (2) strands of tie wire attached to woven straps at contact points with tree trunk. Tension of wires shall be such that trees are not rigidly restrained. Some trunk movement should be permitted to encourage rooting.

4.3.2 Guy trees exceeding 6" caliper or where upright staking is impractical. Securely attach no fewer than 3 guys to stakes 30" long, driven to grade. Attach flags to each guy wire, 30" above finish grade.

4.4 GROUND COVER AND HERBACEOUS PLANTS

4.4.1 Plant herbaceous plants with crown at surface of soil.

4.4.2 Prior to planting, biodegradable pots shall be broken up and any above-ground portion removed.

4.4.3 Install plants so that roots are surrounded by soil. Do not cover root ball with soil.

4.4.4 Water plants thoroughly, within maximum of four (4) hours of installation.

4.5 MULCHING

4.5.1 Mulch backfilled areas around plantings, planting beds and other areas indicated on plans.

4.5.2 Planting beds shall be surrounded by an edged trench, 2 – 6" deep and roughly V-shaped. The trench shall be filled to grade with slightly compacted mulch.

4.5.3 Apply mulch at 2 – 4" thickness.

4.5.4 Mulch should be placed no closer than 4 – 6" to trunks or stems.

4.6 SEEDING NEW TURF AREAS

4.6.1 Evenly distribute seed by sowing quantities in two (2) directions at right angles to each other. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.

4.6.2 Sow seed at the following rates: 5 to 8 lb. per 1000 sq. ft.

4.6.3 Rake seed lightly into top ¼" of topsoil, roll lightly, and water with fine spray.

4.6.4 Protect seeded areas against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly at a minimum rate of 1-2 tons per acre to form a continuous, 1 ½" loose depth over seeded areas.

4.6.5 Avoid placing seed or straw in mulched areas.

4.7 HYDROSEEDING NEW TURF AREAS

4.7.1 Hydroseeding: Mix specified seed, starter fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

4.7.2 Mix slurry with nonasphaltic tackifier.

4.7.3 Apply slurry uniformly only to areas to be seeded in a one (1) step process. Apply mulch at the minimum rate of 1500 lb per acre dry weight but not less than the rate required to obtain specified seed-sowing rate. Clean slurry off any non-turf surface.

4.8 SODDING NEW TURF AREAS

4.8.1 Lay sod within 24 hours of harvest. Do not lay sod if dormant or if ground is frozen.

4.8.2 Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

4.8.3 Lay sod across angle of slopes exceeding 1:3.

4.8.4 Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

4.8.5 Saturate sod with fine water spray within two (2) hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1 ½" below the sod.

4.9 CLEANUP, PROTECTION, DISPOSAL OF SURPLUS AND WASTE

4.9.1 During landscaping, keep pavements clean and work area in an orderly condition.

4.9.2 Protect grounds from damage due to landscape operations. Endeavor to protect plants from damage from operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods.

4.9.3 Protect turf by installing temporary barricade fence to exclude traffic around perimeter of turf area.

4.9.4 Disposal: Remove waste material, including excess soil, unsuitable soil, trash, and debris, and legally dispose of it off PRCS property.

4.10 MAINTENANCE

4.10.1 Begin maintenance immediately after planting.

4.10.2 Maintain turf, trees, shrubs, and other plants until final acceptance.

4.10.3 Maintain trees, shrubs, and other plants by watering as required for healthy growth. Maintain specified mulch depth and remove all weeds. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical positions as required. Do not prune except to remove broken branches.

4.10.4 Maintain turf by watering, fertilizing, weeding, weekly mowing to 3", trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, healthy, uniform stand of grass. Acceptable turf shall have grass coverage of at least 90% density and be essentially free of weeds and bare areas.

4.11 INSPECTION AND ACCEPTANCE

4.11.1 When landscape work is completed, including maintenance, PRCS will, upon request, make an inspection to determine acceptability.

4.11.2 When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by PRCS and found to be acceptable. Remove rejected plants and materials promptly from project site.

4.12 WARRANTY

4.12.1 Warrant turf through specified turf maintenance period as specified in, and until final acceptance.

4.12.2 Warrant trees and shrubs, for a period of one year, after date of acceptance, against defects including death, unsatisfactory growth, and greater than 25% dieback. Defects resulting from neglect by PRCS, abuse or damage by others, or unusual phenomena or incidents which are beyond contractor's control are exempted.

SECTION 6.09 TIMBER WALL

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 Contractor shall provide all labor, materials, equipment, and services necessary to construct wood timber walls and all related items as shown on the plans and specified herein.

3. MATERIALS

3.1. Structural lumber for timber wall shall be nominal 6" x 8", exterior grade, no. 2 or better, free of splinters, smooth cut pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 236 and Section 418 of the VDOT Specifications. All fabricating, cutting, boring and trimming shall be done prior to preservative treatment. Timber lengths shall be cut to fit as required for wall and edge construction. Minimum length of timbers shall be 6' (except for deadmen or when length of wall segment is less than 6'). All lumber shall be subject to inspection at the treating plant prior to treating.

3.2. Preservative for lumber shall conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type. Provide MSDS cut sheet of proposed preservative to PRCS.

3.3. Penetration of preservative for lumber shall conform to current VDOT standard.

3.4. Nails, spikes, and other hardware shall be galvanized steel and shall conform to current VDOT standard.

3.5. Side or angle plates shall be galvanized steel, size as required, as manufactured by Simpson Strong-Tie Co., Inc. (1-800-999-5099), or approved equal.

3.6 Aggregate Base shall be VDOT No. 21-A.

3.7. Rebar Anchor shall be deformed bars, size #4 conforming to VDOT Specifications, length as shown on the plans and details.

4. CONSTRUCTION

4.1. Timber walls and edges shall be located and constructed as shown on the site plan and details.

4.2. Timber wall heights shall be as shown on the plans. Walls up to and including 2'-0" height above subgrade do not require deadmen. Timber walls exceeding 2'-0" height above subgrade require deadmen on the fourth or fifth tier above subgrade. Limits of deadmen construction as shown on plans are approximate. Actual deadmen placement is determined in field by height of wall above subgrade. Except where noted on plans, timber deadmen and timber anchors shall be 4' long. No deadmen shall be installed in the top tier.

4.3. Vertical joints shall be staggered 2' minimum between adjacent tiers.

4.4. Backfill shall be thoroughly compacted to 95% density at optimum moisture content in accordance with AASHTO T-99 and these specifications. Lifts of backfill shall be no more than six (6) inches deep to permit proper compaction.

4.5. Top timbers shall have a one (1) inch chamfer on exposed edges.

4.6 Construction of the timber walls and edges shall be completed and approved by PRCS prior to installation of the play apparatus area equipment.

SECTION 6.10 TIMBER WALLS AND STEPS

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of furnishing all labor, materials and equipment necessary to construct wood timber walls, steps, and all related items as shown on the drawings and specified herein.

3. MATERIALS

3.1 Structural Lumber shall be 6" x 8", exterior grade, smooth cut pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 244 and Section 423 of the VDOT Specifications. All fabricating, cutting, boring and trimming shall be done prior to preservative treatment.

3.2 Preservative for Lumber shall conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type. Provide MSDS cut sheet of proposed preservative to PRCS.

3.3 Penetration of Preservative for Lumber shall conform to Section 246.02 paragraph 2, of the VDOT Specifications.

3.4 Lumber shall be subject to inspection at the treating plant prior to treating.

3.5 Nails and other hardware shall be galvanized and shall conform to Section 423.02, Article (d) of the VDOT Specifications.

3.6 Aggregate Base shall be VDOT No. 21-A.

3.7 Reinforcing Bar shall be deformed bars, Size #4 conforming to Section 223 of the VDOT Specifications, length as shown on the plans and details.

4. INSTALLATION

4.1 The timber walls and steps shall be located as shown on the site plan and details.

4.2 Backfill shall be thoroughly compacted to 95% density at optimum moisture content in accordance with AASHTO T-99 and these standards. Lifts of backfill shall be no more than six inches deep to permit proper compaction.

4.3 Timber walls up 2'-0" height from subgrade do not require deadmen.

4.4 Timber walls 2'-0" - 3'-6" height from subgrade require deadmen at 8'-0" on center on the fourth or fifth course from subgrade.

4.5 Timber walls above 3'-6" height require deadmen on each level above the fourth course and ending on the third course down from the top of the wall. Deadmen shall be spaced 8'-0" on center on alternating timber courses.

4.6 Top timbers shall have a one (1) inch chamfer on side where wood chip surface occurs.

4.7 Construction of the timber walls and steps shall be completed and approved by PRCS prior to installation of play apparatus area equipment.

SECTION 6.11 TIMBER WALL AND EDGE

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 Contractor shall provide all labor, materials, equipment, and services necessary to construct wood timber walls, edges and all related items as shown on the plans and specified herein.

3. MATERIALS

3.1 Structural lumber for timber wall and edge shall be nominal 6" x 8", exterior grade, no. 2 or better, free of splinters, smooth cut pressure treated Douglas Fir or Southern Yellow Pine and shall conform to Section 236 and Section 418 of the VDOT Specifications. All fabricating, cutting, boring and trimming shall be done prior to preservative treatment. Timber lengths shall be cut to fit as required for wall and edge construction. Minimum length of timbers shall be 6' except for deadmen or when length of wall segment is less than 6'. All lumber shall be subject to inspection at the treating plant prior to treating.

3.2 Preservative for lumber shall conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type.

3.3 Penetration of preservative for lumber shall conform to VDOT Section 236.02, paragraph (c).

3.4 Nails, spikes, and other hardware shall be galvanized steel and shall conform to VDOT Section 226.02.

3.5 Side or angle plates shall be galvanized steel, size as required.

3.6 Aggregate Base shall be VDOT No. 21-A.

3.7 Rebar Anchor shall be deformed bars, size #4 conforming to Section 223 of the VDOT Specifications, length as shown on the plans and details.

4. CONSTRUCTION

4.1 Timber wall heights shall be as shown on the plans. Walls up to and including 2'-0" height above subgrade do not require deadmen. Timber walls exceeding 2'-0" height above subgrade require deadmen on the fourth or fifth tier above subgrade. Limits of deadmen construction as shown on plans are approximate. Actual deadmen placement is determined in field by height of wall above subgrade. Except where noted on plans, timber deadmen and timber anchors shall be 4' long. No deadmen shall be installed in the top tier.

4.2 Vertical joints shall be staggered 2' minimum between adjacent tiers.

4.3 Backfill shall be thoroughly compacted to 95% density at optimum moisture content in accordance with ASTM D 698 and these specifications. Lifts of backfill shall be no more than six inches deep to permit proper compaction.

4.4 Top timbers shall have a one-inch chamfer on exposed edges, except for timber edge flush with asphalt surface and play surface at entrance to play apparatus area.

4.5 Rebar anchor shall not puncture drainpipe.

4.6 Side or angle plates shall be nailed a minimum of two (2) inches below top of play surface so that no portion of plate is visible above play surface.

4.7 Construction of the timber walls and edges shall be completed and approved by PRCS prior to installation of the play apparatus area equipment.

Carpentry

SECTION 7.01 ROUGH CARPENTRY WORK

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of furnishing all labor, materials and equipment necessary for:

2.1.1 Rough carpentry (framing).

2.1.2 Finish carpentry (decking, railing & trim) for wooden piers and boardwalk and all related items as shown on the drawings and specified herein.

3. RELATED SECTIONS

3.1.1 HEAVY TIMBER FRAMING, Section 7.02.

3.1.2 WOOD-POLYMER COMPOSITE DECKING, Section 7.03.

4. QUALITY ASSURANCE

4.1.1 Rough Carpentry Lumber: Visible grade stamp, of agency certified by SPIB and written certification from manufacturer.

5. SUBMITTALS

5.1.1 Submit samples of each connecting device (typical).

6. DELIVERY, STORAGE AND HANDLING

6.1.1 Do not deliver carpentry items until site conditions are adequate to receive the work. Protect items from weather while in transit and in storage.

7. PRODUCTS

7.1 ROUGH CARPENTRY MATERIALS

7.1.1 Southern Pine Dimension Lumber graded in accordance with SPIB Grading rules, maximum moisture content after preservative treatment of 19%.

7.1.2 Preservative shall confirm to AWPA P1/P13, P2, P5, P8 and P9 for species and product type. All lumber shall bear the American Wood Preservers Bureau Quality Mark, MLP "Marine Use".

7.1.3 All members shall be marked or certified as per Paragraph 4.1 of this Section.

7.1.4

Members	Grade	Fb (unadjusted)
2" x 8" Joists	No. 1 Dense	1650 psi
2" x 10" Trim Boards	No. 2	1050 psi
2" x 12" Trim Boards	No. 2	975 psi
4" x 4" Railing Posts	No. 1 Nondense	1700 psi
2" x 6" Top Rail	No. 1 Dense	1750 psi
2" x 4" Bottom Rail	No. 1 Dense	2000 psi
2" x 2" Picket	No. 1 Dense	2000 psi

7.1.5 Nails, Spikes and Staples: Double dipped galvanized.

7.1.6 Bolts, Nuts, Washers, Lags and Screws: Medium carbon steel; sized as shown on drawing, double dipped galvanized.

7.1.7 Joist Hangers; Sized and profiled to suit application; as shown on the drawings, double dipped galvanized finish.

7.1.8 All hardware shall be double dipped galvanized where specified and shall conform to VDOT Section 226.

SECTION 7.02 HEAVY TIMBER FRAMING

1. GENERAL

    1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

    2.1 The work consists of furnishing all labor, materials and equipment necessary for the installation of:

        2.1.1 Heavy structural timber for posts and beams.

        2.1.2 Connection hardware, plates, bolts & screws as shown on drawings.

3. RELATED WORK

    3.1 ROUGH CARPENTRY WORK

    3.2 WOOD POLYMER-COMPOSITE DECKING

    3.3 POURED CONCRETE

4. REFERENCES

    4.1 ANSI/ASTM A123 - Zinc (Hot Galvanized) Coating on Products Fabricated from Rolled, Pressed and Forget Steel Shapes, Plates, Bars and Strip.

5. QUALITY ASSURANCE

    5.1 Lumber Grading Agency: SPIB. Visible grade stamp and written certification from manufacturer.

    5.2 Manufacturer: Company specializing in manufacture of heavy timber framing certified by AITC with three (3) years minimum experience.

6. SUBMITTALS

    6.1 Submit shop drawings [and product data] under provisions of the SUBMITTALS, Section 2.04..

    6.2 Indicate dimensions, wood grades, component profiles, drilled holes, fasteners, connectors, erection details and sequence.

6.3 Submit product data on proprietary connection devices.

7. PRODUCTS

7.1 BEAMS, STRINGERS, POSTS and TIMBERS MATERIAL

7.1.1 Lumber Grading Rules: SPIB, Select Quality Paragraph 432.

7.1.2

Members	Grade	Fb (unadjusted)
6” x 6” Columns	No. 1 Dense SR	1550 psi.
6” x 8” Beams	No. 1 Dense SR	1550 psi.

Maximum moisture content after preservative treatment of 19%.

7.1.3 Treatment: Preservative shall conform to AWPA P1/P13, P2, P5, P8 and P9 for species and product type.

7.2 ACCESSORIES

7.2.1 Connectors: Hot double dipped galvanized steel, as shown on the drawings.

7.2.2 Bolts, Nuts, Washers, Lags and Screws: Medium carbon steel; hot double dipped galvanized coating; size and type as shown on the drawings.

7.3 FABRICATION

7.3.1 Fabricate components in accordance with AITC, with joints neatly fitted, welded and ground smooth.

7.4 FINISHES

7.4.1 Galvanize connectors in accordance with ANSI/ASTM A123.

8. EXECUTION

8.1 ERECTION

8.1.1 Employ competent carpenters and construct the work to required levels and lines, with members plumb and true to line and cut and fitted. Drive nails and spikes with sufficient force to set heads flush with surface of the work. Deep hammer marks in work surfaces are evidence of poor workmanship and will be rejected by PRCS. Cut and frame timber to a close fit in such a manner that joints will have even bearing over entire contact surface.

8.1.2 Beams: Provide wood framing members of size and spacing indicated; do not splice structural members between supports. Make tight connections between members. Install fasteners without splitting of wood; predrill as required. Bolt ends shall be peened after posts and beams/stringers have been assembled.

8.1.3 Make provision for erection loads and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of permanent bracing.

8.1.4 After erection, touch up primed and galvanized surfaces with primer consistent with shop coat, zinc primer.

8.1.5 Bolts: Bore holes with bit of same diameter as bolt.

8.1.6 Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.

SECTION 7.03 WOOD-POLYMER COMPOSITE DECKING

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

   2.1 The work consists of furnishing all labor, materials and equipment necessary for the installation of wood-polymer composite decking & handrail on proposed heavy timber framing for piers and boardwalk.

3. RELATED WORK

   3.1 ROUGH CARPENTRY WORK, Section 7.01.

   3.2 HEAVY TIMBER FRAMING, Section 7.02.

4. SYSTEM DESCRIPTION

   4.1 Design Floor Live Load: 100 lbs/sq ft with deflection limited to 1/360.

   4.2 Ten (10) year limited manufacturer's warranty.

5. SUBMITTALS

   5.1 Submit, for approval, manufacturer's installation instructions for all products used in decking prior to installation.

6. DELIVERY, STORAGE AND HANDLING

   6.1 Store and protect products under manufacturer’s recommendations.

SECTION 7.04 EXTERIOR PAINTING

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work consists of providing all labor, materials and services necessary for painting.

3. MATERIALS

3.1 For the purpose of establishing an acceptable basis of quality, all paint shall be equal to material specified or highest grade products as manufactured by Duron Paints or equal.

3.2 Exterior work

3.2.1 Primer – Two (2) touchup coats on bare metal areas only: PPG inhibitive red primer 6-208 or equal.

3.2.2 First & second coat - PPG Industries quick dry alkyd enamel or equal. The color shall match a color chip supplied at time of construction.

3.2.3 Unless specifically approved or otherwise specified, use products of one manufacture only in combination; the same manufacturer as finish coats shall produce undercoats.

4. EXECUTION

4.1 Preparation of surfaces

4.1.1 All surfaces to be painted or finished shall be adequately protected from dampness and shall be clean, dry, smooth and free from dust and all foreign matter which will adversely affect adhesion or appearance.

4.1.2 Remove dirt, grease and oil from surfaces to be painted, using mineral spirits and wipe dry with clean cloths.

4.1.3 Remove rust and/or scale to sound surface with wire brush, scraper or sandpaper and wipe clean before touchup priming and painting.

4.1.4 Sand abraded and rough surfaces smooth after each coat.

4.2 Inspection

4.2.1 The Contractor shall correct the following at no additional cost to PRCS:

4.2.1.1 Paint contamination (splatter, spills, etc.) of adjacent surfaces not scheduled to receive paint.

4.2.1.2 Unsatisfactory finish applied to improperly prepared surfaces.

5. WEATHER AND SITE CONDITIONS

5.1 Do not apply exterior paint in damp or rainy weather, when temperature is below 50 degrees F., or when the temperature is likely to drop to freezing (32 degrees F) within 24 hours. Avoid painting surfaces while they are exposed to hot sun.

5.2 Do not apply materials to extremely hot or cold metal.

6. APPLICATION

6.1 The first and second coat must have visual evidence of solid hiding and uniform appearance. The color shall be consistent from surface to surface. Painting shall be done in a workmanlike manner so as to produce and even film of uniform thickness. Edges, crevices, corners and joints shall receive special attention to insure that they are thoroughly cleaned and receive an adequate film thickness of paint.

6.2 There shall be no physical evidence of runs, sags, curtains or other evidence of poor application.

6.3 Inter-mix, thin and apply only in accordance with manufacturer's latest published directions.

6.4 Allow each coat of paint to dry thoroughly before applying succeeding coats; minimum of 48 hours between exterior coats.

6.5 Sand enamel undercoating between coats with fine sandpaper to produce smooth, even finish. Where high gloss is used, sand with very fine grit between coats. Remove all dust after each sanding to produce an even, smooth finish.

6.6 At completion, touch up and restore finish where damaged and leave in proper condition.

6.7 Touch-Up kit to be provided to PRCS, along with name and number of manufacturer and color of each used paint.

Passive Recreation

SECTION 8.01 PICNIC SHELTER

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 The work includes, but is not limited to, the provision of all material, services, labor, and equipment necessary to construct the following:

2.2 Picnic Shelter

2.3 Concrete Slab

3. MATERIALS

3.1 The shelter will be designed to withstand a live load of 30 lbs. per sq. ft.

3.2 Columns will be wood.

3.3 Glue laminated beams will be architectural grade Southern Yellow Pine, bonded with adhesive. Beams will be manufactured in accordance with American National Standard for Wood Products-Structural Glued Laminated Timbers--ANSI/AITC A190.1-1983. Laminated lumber will be individually wrapped.

3.4 Fascia will be pressure treated 2" x 6" Southern Yellow Pine, S.P.I.B., grade stamped, C and better, surfaced 4 sides, pressure treatment, kiln dried before treatment, with continuous 2" x 4" nailers between beams behind fascia.

3.5 Roof decking will be 2" x 6" x specified lengths, tongue and groove, select grade, kiln dried, Southern Yellow Pine, edge V'd one side, surfaced two sides.

3.6 Shingles will be 30-year, self-sealing laminated, fiberglass mat, asphalt, shingle with ceramic-coated rock granule, class "A" fire rated with felt underlayment.

3.7 Hardware connectors will be steel plate (A36), shop fabricated, hot dip double dipped galvanized after fabrication. Frame structure will be furnished with all necessary nuts, bolts, and fastening devices for a total assembly of parts. All required nails will be furnished.

4. LAYOUT AND CONSTRUCTION

4.1 The shelter, layout and construction sequence will be according to the manufacturer's instructions, the plans, and these specifications.

4.2 Construction of the sub-base will be according to VDOT Specifications, and ROUGH AND FINE GRADING, Section 3.02.

4.3 The base course will be spread and compacted in one layer according to VDOT Specifications.

4.4 Construction of the concrete slab, control joints, expansion joints and footings will be per the plans and as specified in CAST IN PLACE CONCRETE, Section 6.05.

SECTION 8.02 PLAY APPARATUS AREA

1. GENERAL

   1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

   2.1 The work consists of construction of a play apparatus area, including safety ground cover.

3. REGULATORY REQUIREMENTS

   3.1 The Contractor shall insure that the play apparatus area and all equipment meet all requirements as set forth by the Consumer Products Safety Commission (CPSC), A Handbook for Public Playground Safety, current edition.

4. QUALITY ASSURANCE

   4.1 The Contractor shall coordinate with the manufacturer of the play apparatus area equipment to provide a representative who shall observe all phases of the equipment assembly and installation. The Contractor shall provide PRCS with a written statement certifying that all equipment is installed in compliance with Consumer Products Safety Commission (CPSC), guidelines, shop drawings and other applicable specifications.

   4.2 The play apparatus area shall conform to the configuration as shown on the approved plans.

5. SAFETY GROUND COVER

   5.1 Poured-in-place rubber surfacing, depth per CPCS & ASTM standards (applicable to specific apparatus) over 4" concrete slab-on-grade. Slab-on-grade to be per CAST-IN-PLACE CONCRETE, Section 6.05.

   5.2 Wood carpet or equal.

6. TOUCH UP KIT

   6.1 Provide Touch-Up kit.

SECTION 8.03 TRAIL LAYOUT

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. STANDARDS AND CRITERIA

2.1 Trail Use

2.1.1 Trail type, trail width and trail surface type shall be approved by the Director of PRCS after recommendation from the Park Planner(s).

2.2 Trail Location

2.2.1 Trail location shall be based on safety, circulation, and access considerations.

2.2.2 Final trail location shall be approved by the Director of PRCS after review of the Park Planner(s) and other reviewing agency staff.

2.2.3 Proposed trail shall be staked-out; developer shall contact PRCS Park Planner(s) to schedule a field review of the proposed trail site.

2.3 Clearing

2.3.1 Where possible, trails shall be located so as to minimize the loss of trees and disruption of natural environmental conditions.

Signage

SECTION 9.01 SIGNAGE

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

1.2 Standard Signage for Parks and Facilities

1.2.1. Information: Entrance/Welcome/Arrival, Exit, Fee (if any), Special Events (changeable), Site Specific (e.g., map, resources), Area Specific Designation, Facility Identification, and Future Construction ("coming soon").

1.2.2. Interpretation: Environmental/Ecological and Cultural/Historical/Man-made

1.2.3. Direction: Park Approaches (VDOT), Internal Vehicular Traffic, Internal Pedestrian Traffic, and Trail Markers.

1.2.4. Regulation: Fee (if any), Rules/Restrictions (County/PRCS and Site Specific), Safety/Warning, Roadway/Traffic, Boundary, Temporary Closure (Maintenance).

1.3 The Comprehensive Signage Plan Committee is currently developing a separate signage standards manual. Contact the Chief Park Planner in the PRCS Facilities Planning and Development Division for current standards on size, color, material, font-type, and location.

Historical & Cultural Sites

SECTION 10.01 HISTORIC AND CULTURAL SITES

1. GENERAL

1.1 Reference is made to the Loudoun County Board of Supervisors' Policy for Acceptance and Maintenance of Historical Properties, as adopted by the Loudoun County Board of Supervisors on May 7, 1997.

1.2 Reference is made to the Loudoun County Heritage Preservation Plan, as adopted by the Loudoun County Planning Commission on November 5, 2003.

1.3 Facilities Planning and Development is currently developing a separate historic and cultural resource management plan that will provide information and procedures for existing and proposed historic sites within County parks.

Proffered Park Sites & Facilities

SECTION 11.01 PROFERRED PARK SITES AND FACILITIES

1. GENERAL

1.1 All work under this section is subject to the provisions of Chapter 1, Section 1.01 General References for All Sections.

2. SCOPE

2.1 This section includes information pertaining to park sites and facilities proffered under legislative application approval conditions with the County of Loudoun.

3. IMPLEMENTATION

3.1 Once proffered to the County, written notice shall be provided to the Director of the Department of Parks, Recreation and Community Services prior to any clearing, grading, mining of topsoil or earth fill, soil stockpiling, staging of equipment or materials, disposal of soil or waste material, or dumping on land that is to be dedicated to the County for purposes of public parks, active recreation, or passive open space.

3.2 Design and construction of park sites and facilities shall meet these standards once endorsed by the Board of Supervisors. Park sites and facilities designed and constructed prior to the endorsement of these standards shall be exempt.

3.3 Construction shall not commence until a pre-construction meeting has been coordinated with PRCS Project Manager. The Project Manager will inspect the project periodically during the course of construction to ensure compliance with these standards. Acceptance of park sites and facilities will be based on compliance with the Loudoun County PRCS Design and Construction Guidelines.

Appendix A

PLANT PALETTE STANDARDS

N* = plants that are native to the Mid-Atlantic Region.

CANOPY TREES

Acer rubrum – Red Maple N*
Betula nigra – River Birch N*
Catalpa bignonioides – Southern Catalpa N*
Celtis occidentalis – Hackberry N*
Cladrastis lutea – Yellowwood N*
Diospyros virginiana – Persimmon N*
Fagus grandifolia – American Beech N*
Fagus sylvatica – European Beech
Fraxinus pennsylvanica - Green Ash N*
Liquidambar styraciflua – Sweet Gum N*
Liriodendron tulipifera – Tulip Poplar N*
Magnolia virginiana – Sweet Bay Magnolia N*
Metasequoia glyptostroboides – Dawn Redwood
Nyssa sylvatica – Black Gum N*
Platanus occidentalis – Sycamore N*
Quercus acutissima – Sawtooth Oak
Quercus alba – White Oak N*
Quercus palustris – Pin Oak N*
Quercus phellos – Willow Oak N*
Quercus rubra – Red Oak N*
Sophora japonica – Pagoda Tree
Taxodium distichum – Bald Cypress N*
Tilia cordata – Littleleaf Linden
Zelkova serrata – Zelkova

UNDERSTORY TREES

Acer palmatum – Japanese Maple
Amelanchier laevis – Juneberry N*
Asimina triloba – Pawpaw N*
Carpinus caroliniana – Ironwood N*
Cercis canadensis – Redbud N*
Chionanthus virginicus – Fringe Tree N*
Cornus kousa – Korean Dogwood
Cornus mas – Cornelian Cherry
Cotinus coggygria – Smoke Tree
Crataegus viridis 'Winter King' – Winter King Hawthorn N*
Halesia tetraptera – Silverbell N*
Hamamelis mollis – Hybrid Witch Hazel

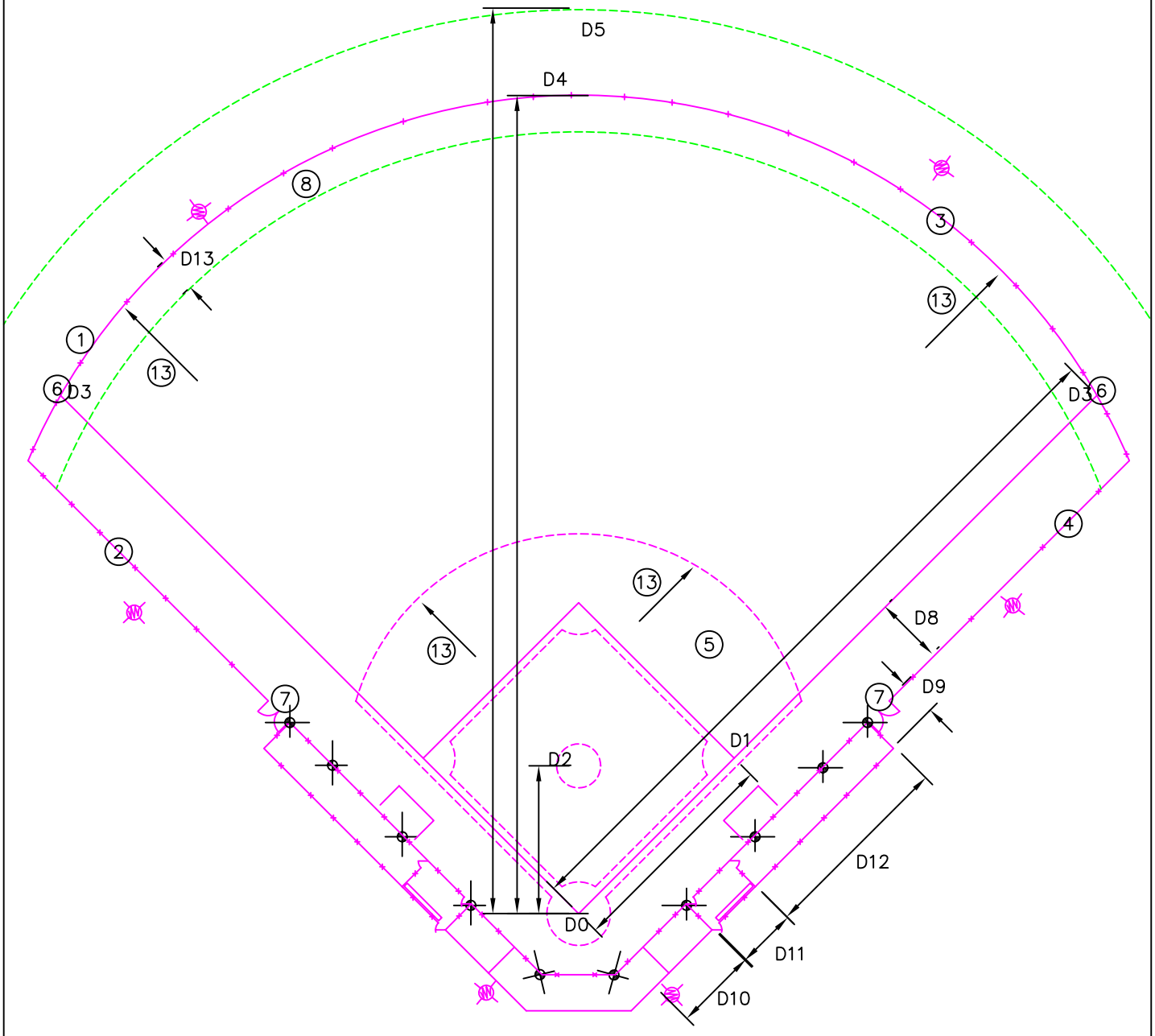
Hamamelis virginiana – Witch-hazel N*
Ilex decidua – Possumhaw N*
Magnolia X loebneri 'Dr. Merrill','Leonard Messel' – Loebner Magnolia
Magnolia stellata – Star Magnolia
Ostrya virginiana – Hop Hornbeam N*
Oxydendron arboreum – Sourwood N*
Phellodendron amurense – Amur Cork Tree
Prunus cerasifera 'Thundercloud' – Purple Plum
Stewartia pseudocamellia – Japanese Stewartia
Styrax japonica - Snowbell
Viburnum prunifolium – Black Haw N*

EVERGREEN TREES
Cryptomeria japonica – Japanese Cedar
Ilex X attenuata 'Foster #2' – Foster Holly
Ilex X 'Dragon Lady' **–** Dragon Lady Holly
llex opaca – American Holly N*
Juniperus virginiana – Red Cedar N*
Picea omorika – Serbian Spruce
Pinus resinosa – Red Pine N*
Pinus strobus – White Pine N*
Pinus virginiana – Virginia Pine N*
Thuja occidentalis – American Arborvitae N*

SHRUBS/GRASSES
Aronia arbutifolia 'Brilliantissima' – Chokeberry N*
Aronia melanocarpa – Black Chokeberry N*
Buddleia davidii – Butterfly Bush
Callicarpa dichotoma, C. japonica – Beautyberry
Caryopteris X clandonensis – Blue Mist Shrub
Clethra alnifolia - Summersweet N*
Cornus stolonifera 'Kelseyi', 'Cardinal', 'Aurea' – Red/yellow Twig Dogwood N*
Fothergilla gardenii Witch Alder N*
Hydrangea arborescens 'Annabelle', 'Hills of Snow' – White Hydrangea N*
Hydrangea macrophylla – House Hydrangea
Hydrangea paniculata – Panicle Hydrangea
Hydrangea quercifolia – Oakleaf Hydrangea N*
Ilex glabra – Inkberry N*
Ilex glabra 'Compacta' – Dwarf Inkberry N*
Ilex verticillata – Winterberry Holly N*
Ilex X 'China Girl', 'China Boy' – China Holly
Ilex X meserveae 'Blue Angel', 'Blue Princess' – Blue Holly
Ilex X 'Sparkleberry' – Sparkleberry Holly

Itea virginica – Sweet Spire N*
Lagerstroemia indica – Crape Myrtle
Mahonia bealei – Leatherleaf Mahonia
Miscanthus sinensis – Silver Grass
Nandina domestica - Nandina
Panicum virgatum – Switch Grass N*
Pieris japonica - Andromeda
Potentilla fruticosa - Cinquefoil
Prunus laurocerasis 'Otto Luykens', 'Schipkaensis','Zabeliana' – Cherry Laurel
Rhododendron carolinianum – Carolina Rhododendron N*
Rhododendron maximum – Rosebay Rhododendron N*
Rhododendron periclymenoides – Pinxter Azalea N*
Rhododendron viscosum – Swamp Azalea N*
Rhododendron X PJM – PJM Rhododendron
Spiraea X bumalda, S. japonica – Dwarf Spirea
Taxus baccata 'Repandens' – English Weeping Yew
Taxus cuspidata 'Capitata'– Pyramidal Japanese Yew
Taxus X media 'Hicksii'– Columnar Yew
Vaccinium corymbosum – Highbush Blueberry N*
Viburnum X burkwoodii 'Mohawk' – Mohawk Viburnum
Viburnum dentatum – Arrowwood Viburnum N*
Viburnum plicatum tomentosum – Doublefile Viburnum
Viburnum X pragense – Prague Viburnum
Viburnum setigerum – Tea Viburnum

Appendix B



DIMENSIONS:

FOUL LINE: 325'
STRAIGHT AWAY: 350' min.
D0 – D1: 90'
D0 – D2: 60'–6"
D0 – D3: 325'
D0 – D4: 385' – 400'
D0 – D5: D4 + 10' maintenance area
D0 – D6:
D0 – D7:
D8: 25'
D9: 15'
D10: 40'
D11: 25'
D12: 80'
D13: 15'

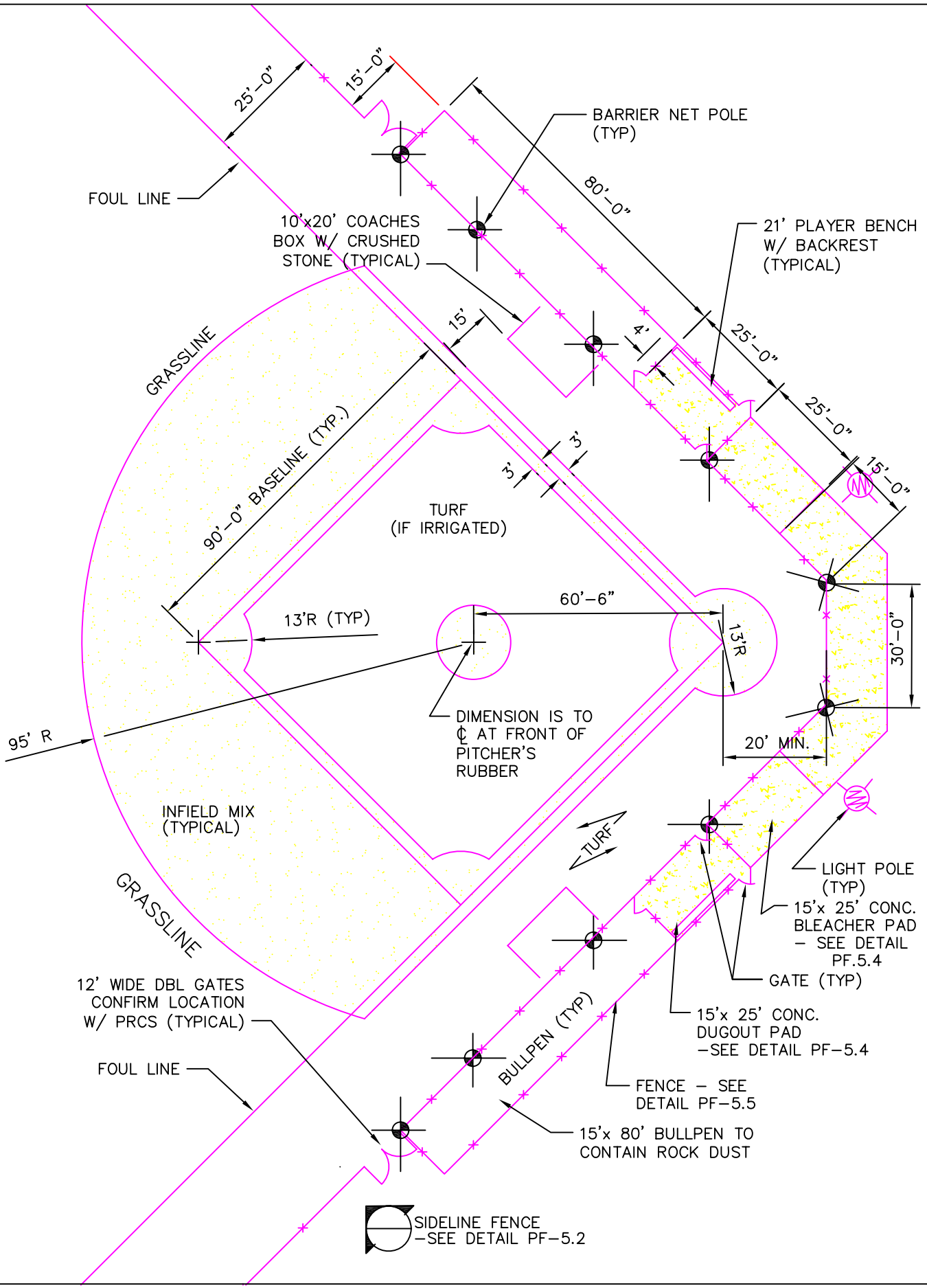
NOTES:

1: SCORE PANEL
2: FENCE
3: FENCE
4: FENCE
5: INFIELD
6: FOUL POLE
7: 12' WIDE DOUBLE GATE
8: WARNING TRACK
9: PARKING REQ'D: 60 SPACES
10: TOTAL AREA REQ'D: 4.3 AC.
11: STAKE–OUT APPROVAL REQUIRED FROM PRCS.
12: ORIENTATION APPROVAL REQUIRED FROM PRCS.
13: SLOPE INFIELD 1.5% SLOPE OUTFIELD 1%
14: PREFERED ORIENTATION IS N/S AT D0–D4 LINE.

LARGE BASEBALL FIELD DIMENSIONS

PF–1.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

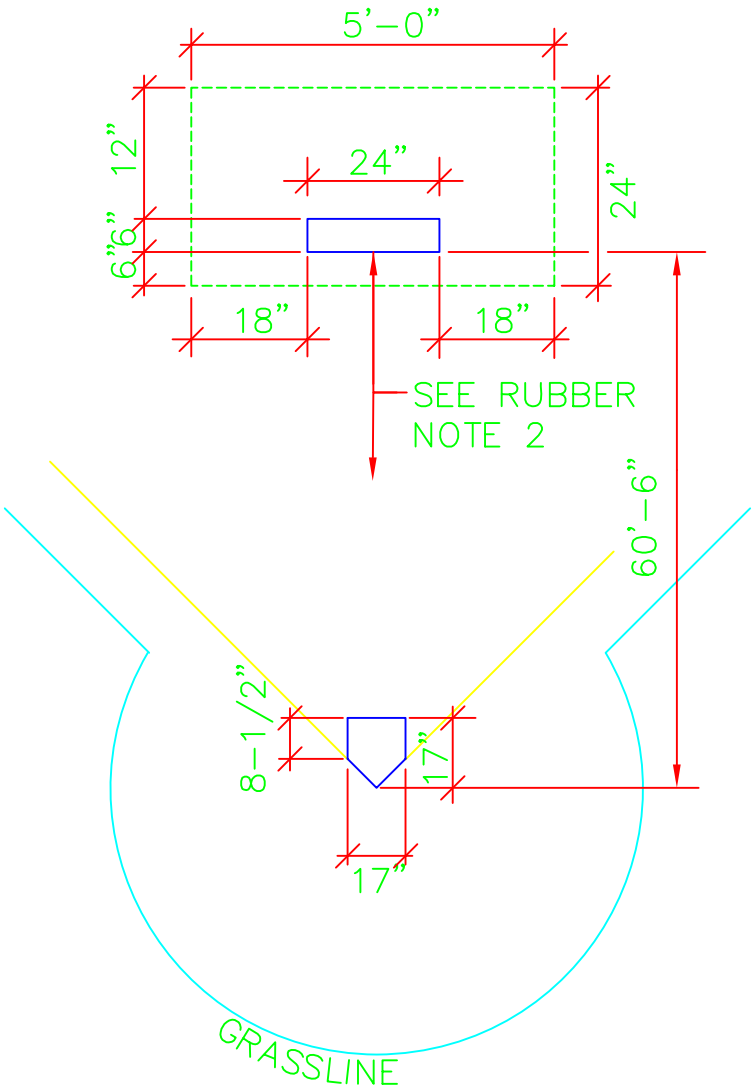


LARGE BASEBALL FIELD LAYOUT

PF-1.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

DETAIL OF FLAT SURFACE OF PITCHERS MOUND

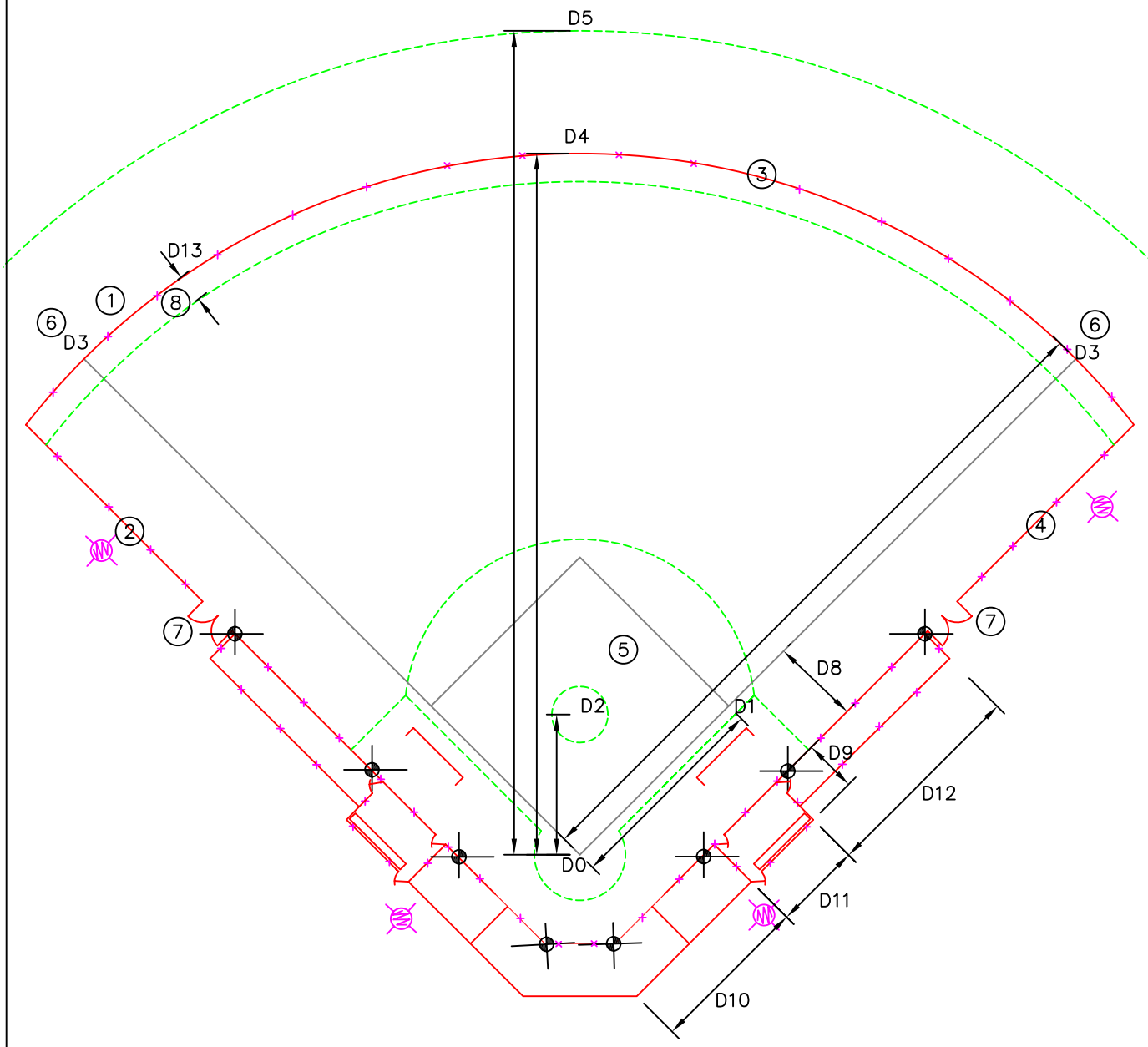


HOME PLATE

NOTES:

1. CENTER OF PITCHER'S MOUND (10' R) IS 12" FROM FRONT OF RUBBER.

2. THE PITCHER SHALL BE 10" ABOVE THE LEVEL OF HOME PLATE FOR BASEBALL FIELD.



DIMENSIONS:

FOUL LINE: 200'
STRAIGHT AWAY: 200'
D0 – D1: 60'
D0 – D2: 46'
D0 – D3: 200'
D0 – D4: 200'
D0 – D5: D4 + 10' MAINTENANCE AREA
D0 – D6:
D0 – D7:
D8: 25'
D9: 15'
D10: 40'
D11: 25'
D12: 60'
D13: 10'

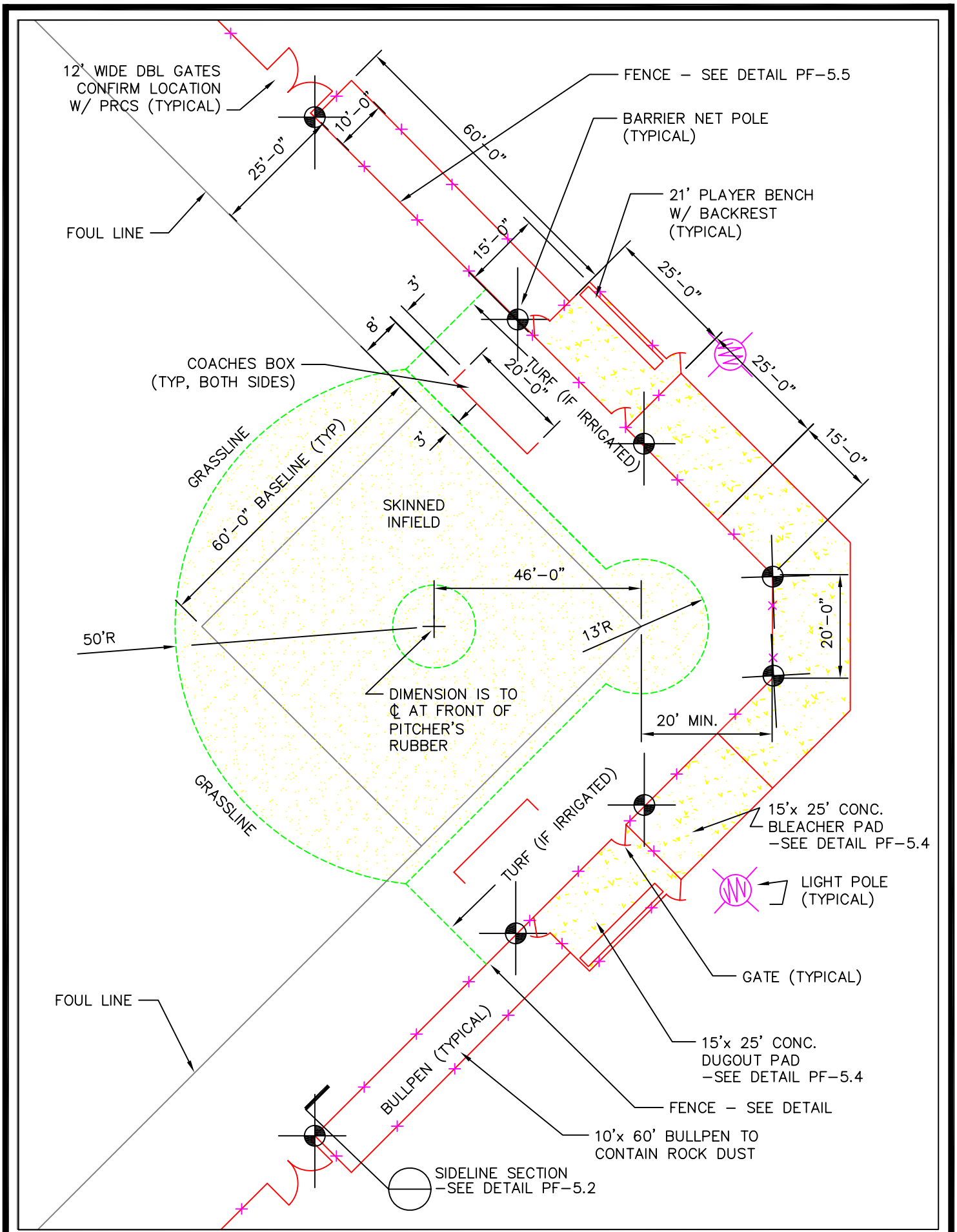
NOTES:

1: SCORE PANEL
2: FENCE
3: FENCE
4: FENCE
5: INFIELD
6: FOUL POLE
7: 12' WIDE DOUBLE GATE
8: WARNING TRACK
9: PARKING REQ'D: 60 SPACES
10: TOTAL AREA REQ'D: 4.3 AC
11: PREFERED ORIENTATION IS N/S AT D0–D4 LINE.
12. DIMENSIONS SAME FOR SOFTBALL FIELD.

SMALL BASEBALL FIELD DIMENSIONS

PF–2.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

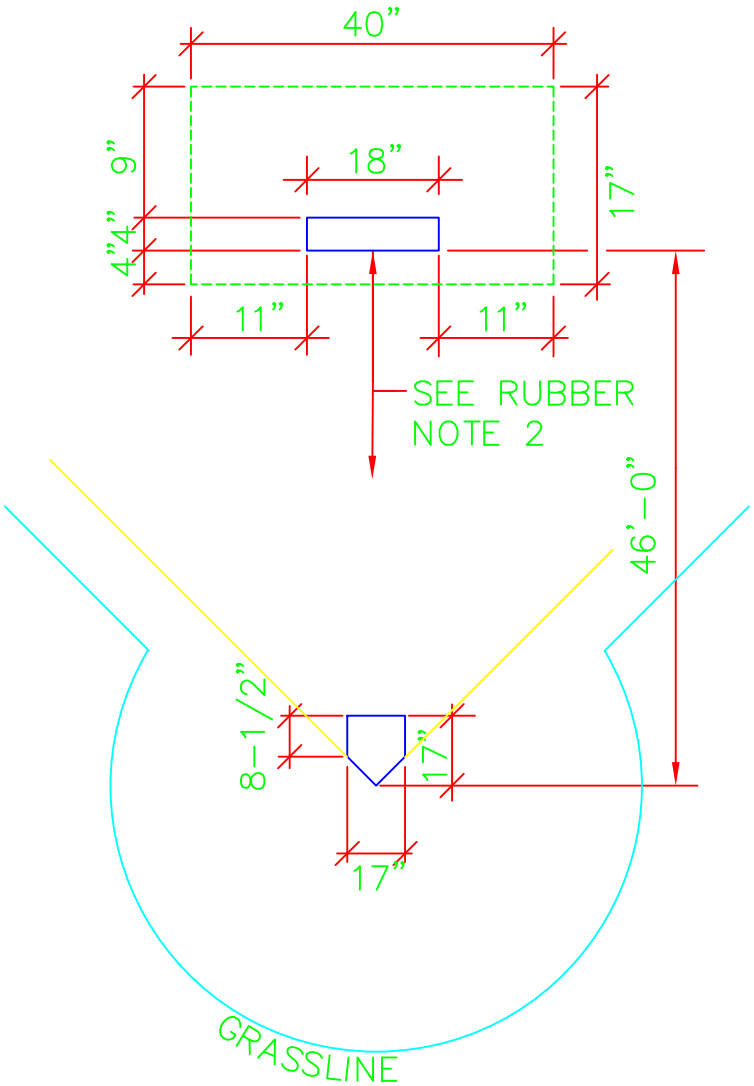


SMALL BASEBALL INFIELD LAYOUT

PF-2.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

DETAIL OF FLAT SURFACE OF PITCHERS MOUND

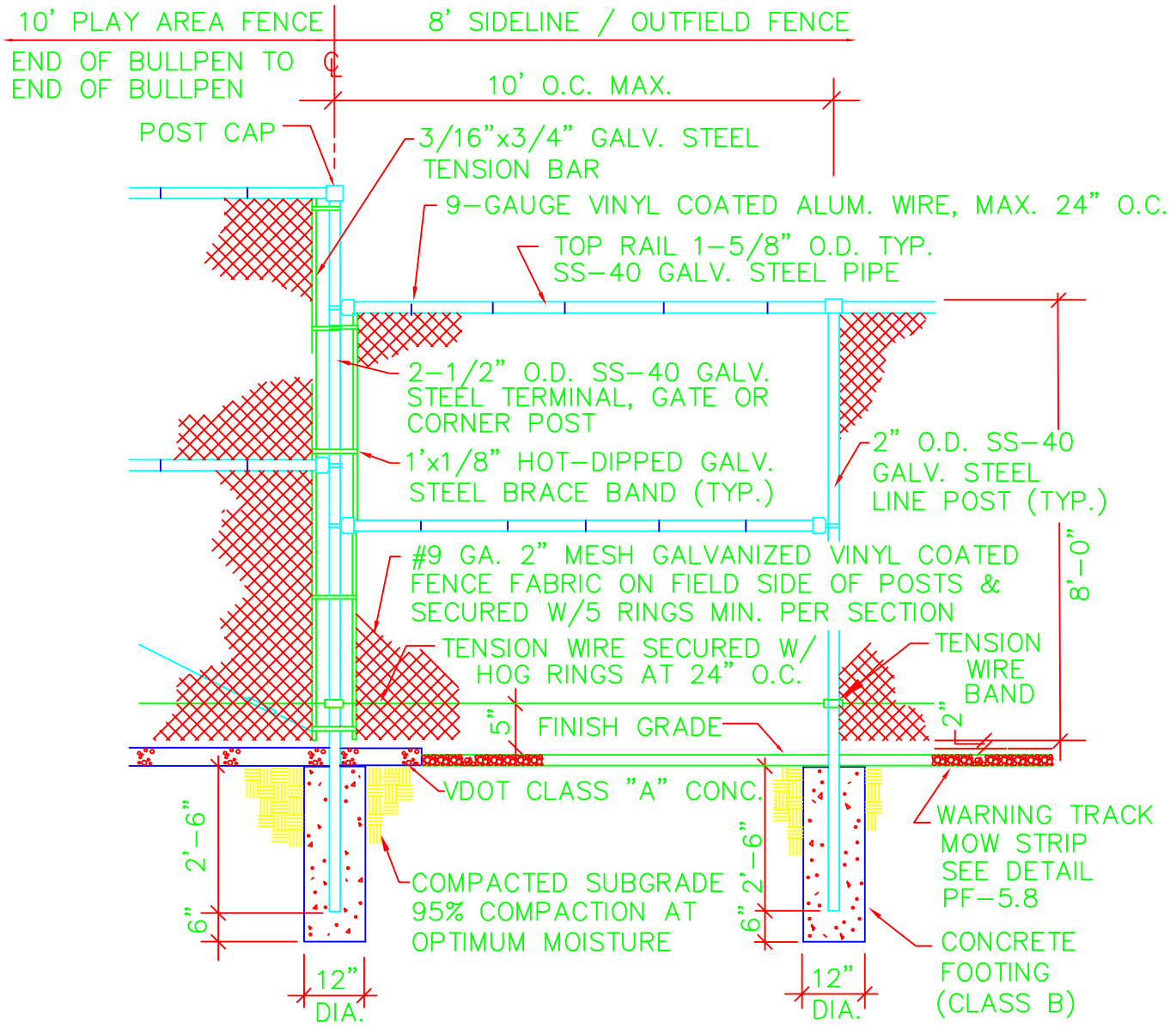


HOME PLATE

NOTES:

1. CENTER OF PITCHER'S MOUND (8' R) IS 12" FROM FRONT OF RUBBER.

2. THE PITCHER SHALL BE 6" ABOVE THE LEVEL OF HOME PLATE FOR BASEBALL FIELD.



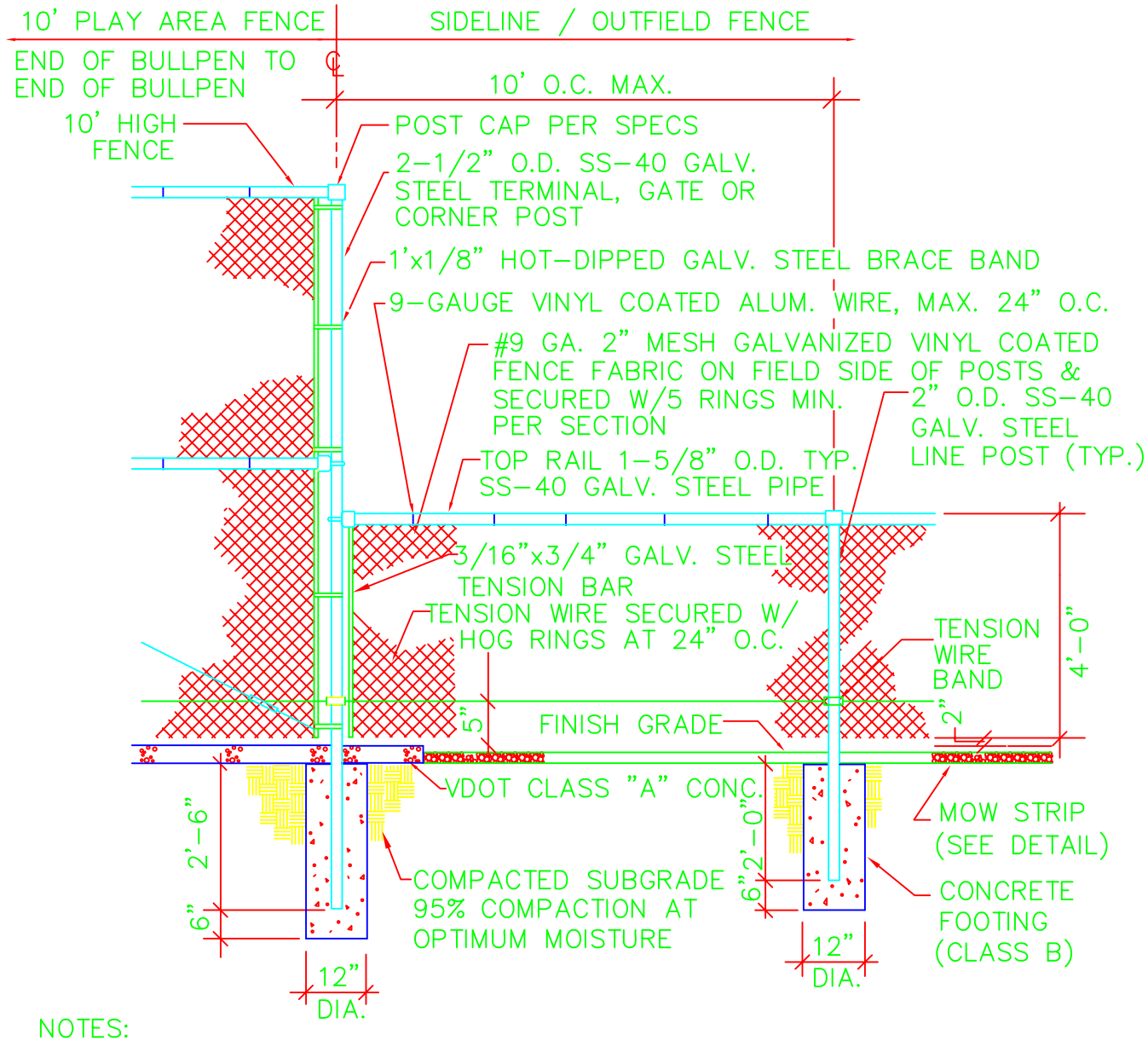
NOTES:

1. TERMINAL POSTS SHALL BE 2-1/2' O.D. AND LINE POST 2" O.D..
2. ALL POSTS SHALL BE SET PLUMB.
3. FABRIC SHALL HAVE KNUCKLED SELVAGE TOP & BOTTOM.
4. FABRIC SHALL BE ON INSIDE/FIELD SIDE OF POSTS.
5. 1/4" DIA. WEEP HOLES SHALL BE 1" ABOVE FINISH GRADE IN ALL POSTS.
6. INCLUDE ONE (1) 12'-0" WIDE, DOUBLE LEAF, FULL HEIGHT GATE PER BALL FIELD. COORDINATE LOCATION WITH OWNER.
7. USE GALVANIZED BANDING IF POST-INSTALATION COATED.

FENCE DETAIL - LARGE BALLFIELD

PF-5.2

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



NOTES:

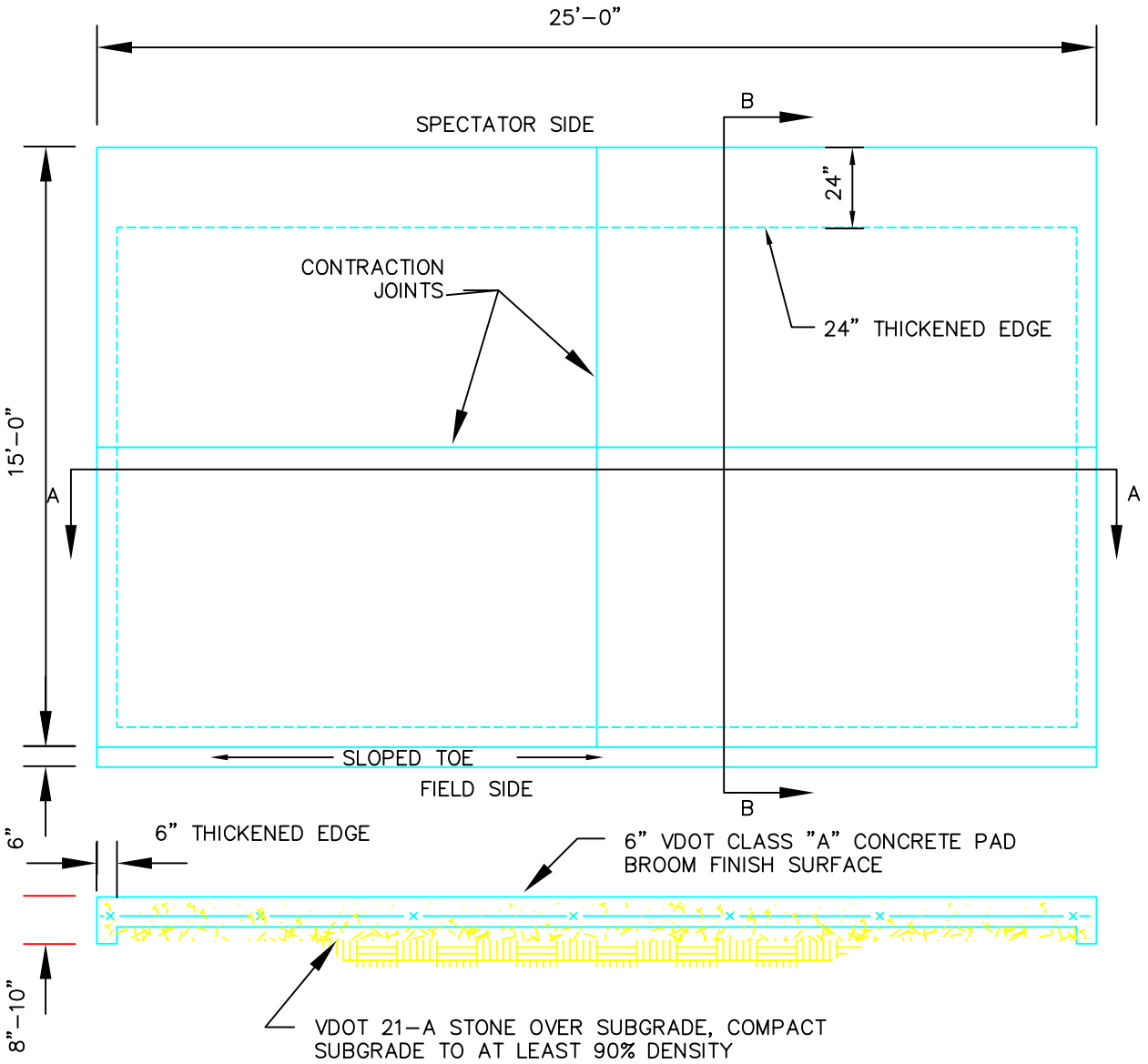
1. TERMINAL POSTS SHALL BE 2-1/2' O.D. AND LINE POST 2" O.D..
2. ALL POSTS SHALL BE SET PLUMB.
3. FABRIC SHALL HAVE KNUCKLED SELVAGE TOP & BOTTOM.
4. FABRIC SHALL BE ON INSIDE/FIELD SIDE OF POSTS.
5. 1/4" DIA. WEEP HOLES SHALL BE 1" ABOVE FINISH GRADE IN ALL POSTS.
6. INCLUDE ONE (1) 12'-0" WIDE, DOUBLE LEAF, 4'-0" HEIGHT GATE PER BALL FIELD. COORDINATE LOCATION WITH OWNER.
7. USE GALVANIZED BANDING IF POST-INSTALLATION COATED.

FENCE DETAIL - SMALL BALLFIELD

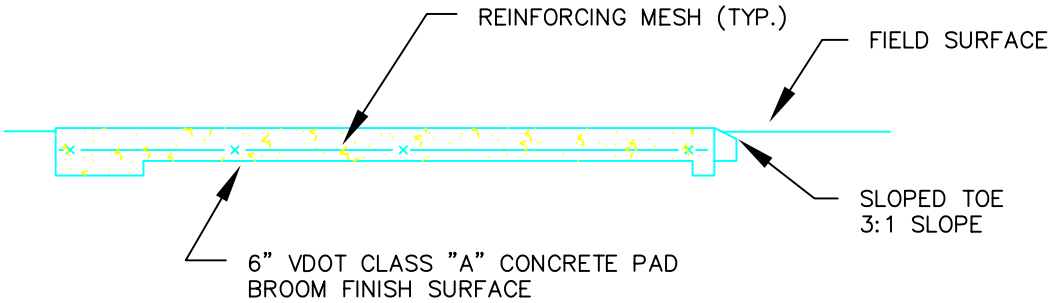
PF-5.3

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

NOTES:
1. BLEACHERS: BSN SPORTS 5 ROW BLEACHERS WITH FENCING, CATALOG #: BS-1049169 OR EQUAL
2. PLAYER BENCHES: BSN SPORTS PLAYER BENCH WITH BACK, CATALOG #: BS-BEN21WB OR EQUAL



SECTION A-A

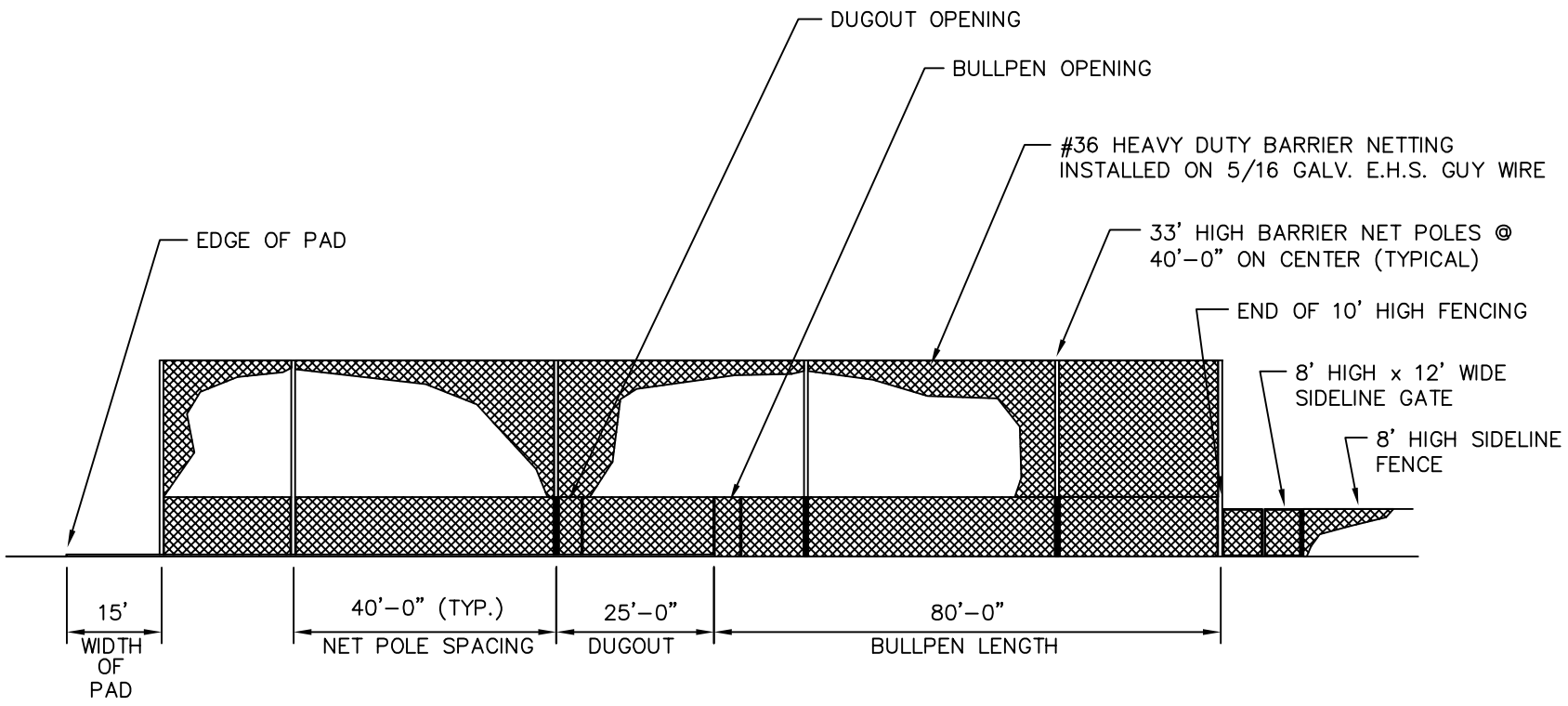


SECTION B-B

BLEACHER / PLAYER BENCH PAD

PF-5.4

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



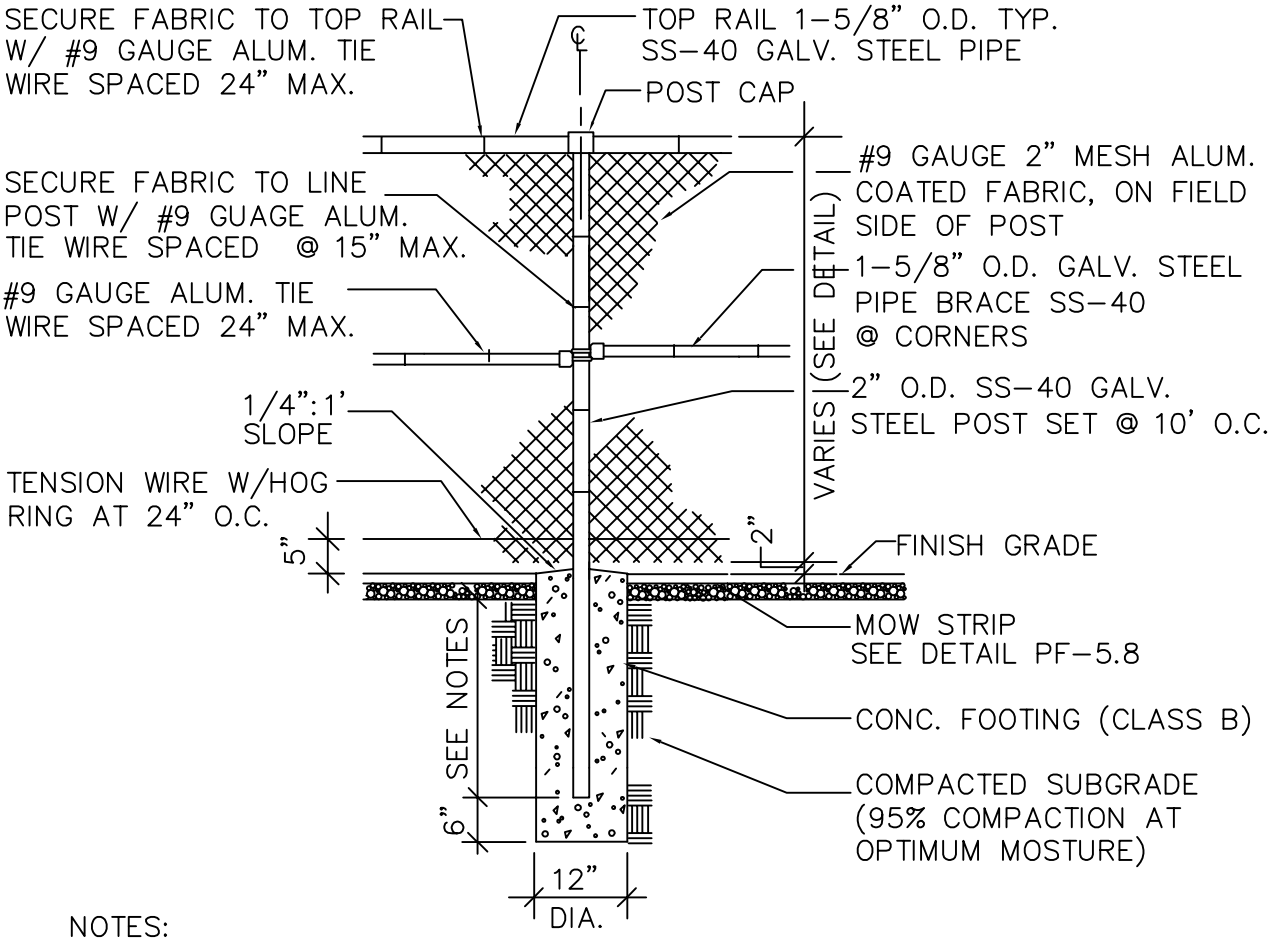
SIDELINE VIEW OF BACKSTOP AREA

SCALE: 1"=30'-0"

BACKSTOP DESIGN

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

PF-5.5



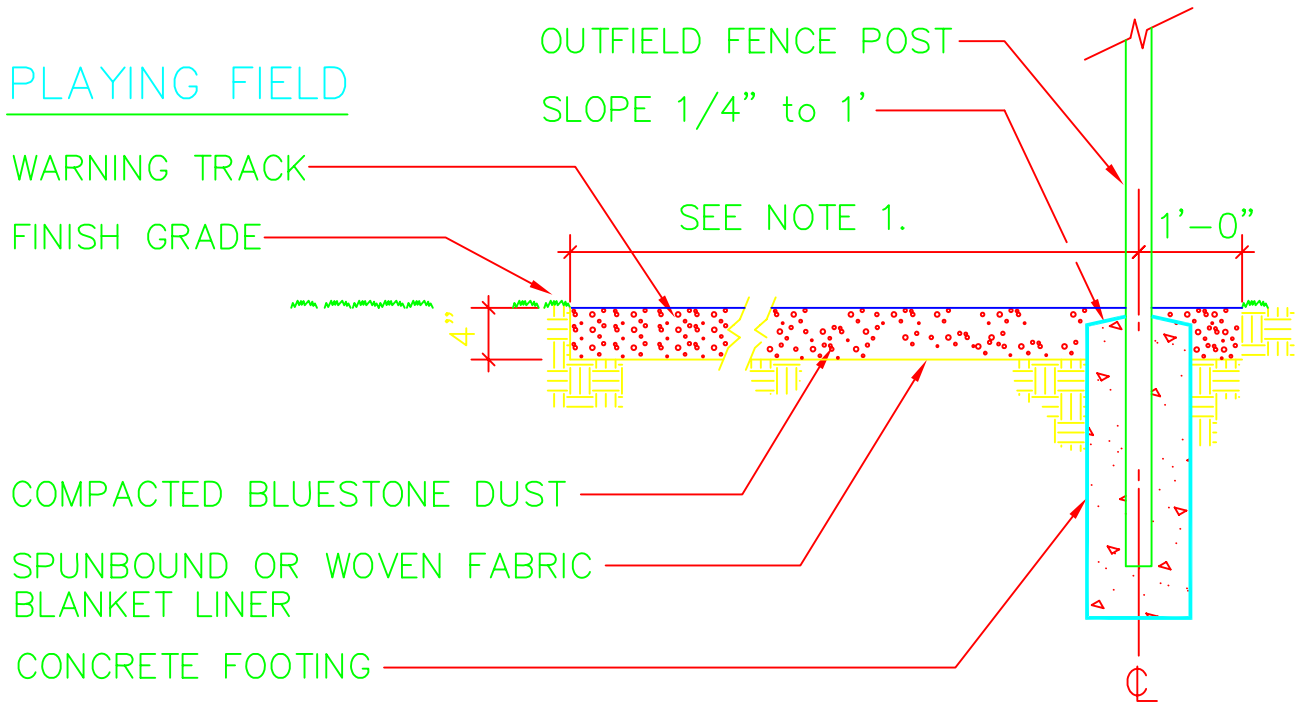
NOTES:

1. TERMINAL POST SHALL BE 2-1/2" O.D. AND LINE POST 2" O.D.
2. ALL POSTS SHALL BE SET PLUMB.
3. FABRIC SHALL HAVE KNUCKLED SELVAGE TOP & BOTTOM.
4. FABRIC SHALL BE ON INSIDE/FIELD SIDE OF POSTS.
5. 1/4" DIA. WEEP HOLES SHALL BE 1" ABOVE FINISH GRADE IN ALL POSTS.
6. INSTALL TERMINAL POST AND ATTACHMENTS (TRUSS ROD, TENSION BAR, BRACE, ETC.) SAME AS TERMINAL POST IN PLAYERS AREA.
7. FABRIC FOR SMALL BALL FIELD SIDELINE AND OUTFIELD FENCE SHALL BE 4' HIGH. POST EMBEDMENT SHALL BE 2-0".
8. FABRIC FOR LARGE BALL FIELD SIDELINE AND OUTFIELD FENCE SHALL BE 10'-0" HIGH. POST EMBEDMENT SHALL BE 2'-6".

OUTFIELD FENCE DESIGN

PF-5.7

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



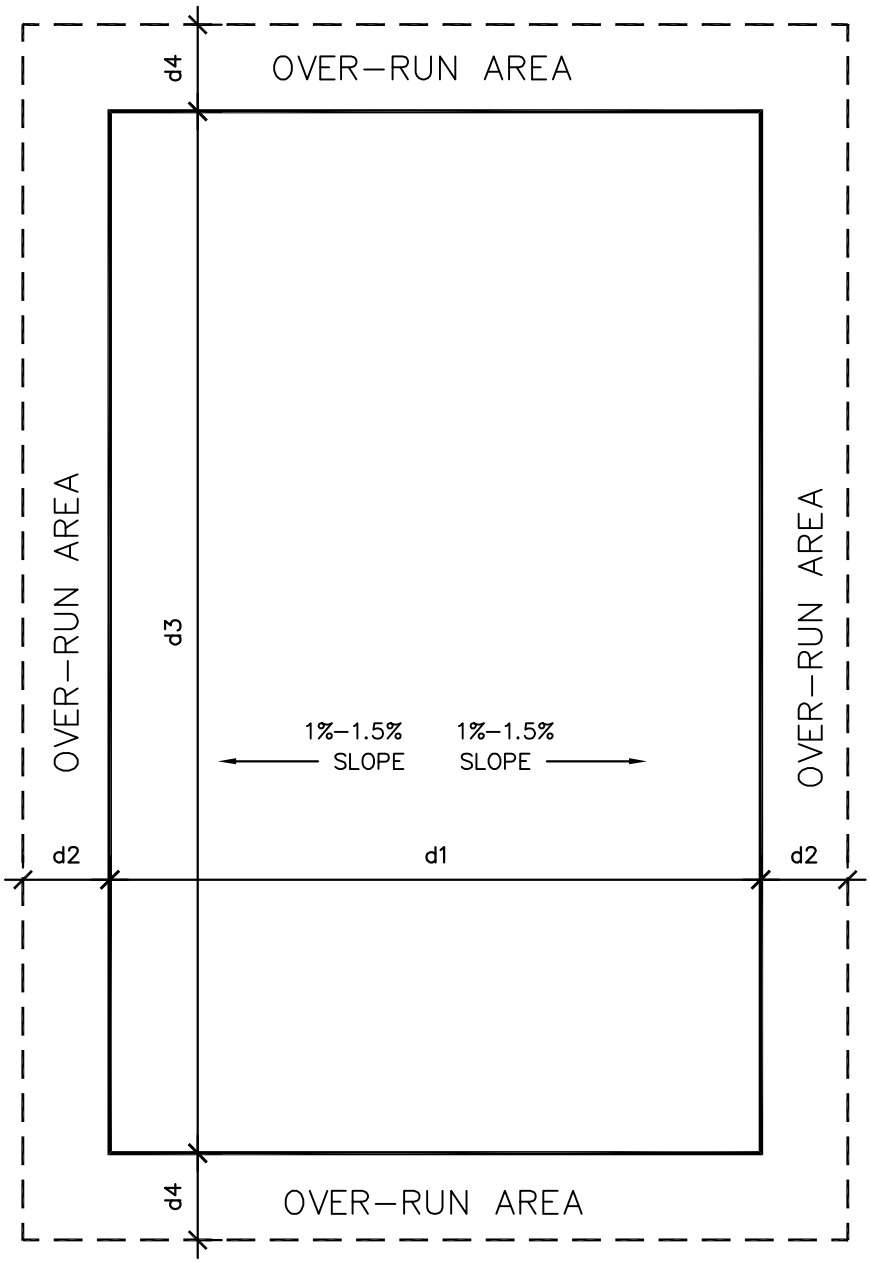
NOTES:

1. 15'-0" AT LARGE BALLFIELD; 10'-0" AT SMALL BALLFIELD

WARNING TRACK - SECTION

PF-5.8

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 225'
d2: 30'
d3: 360'
d4: 30'

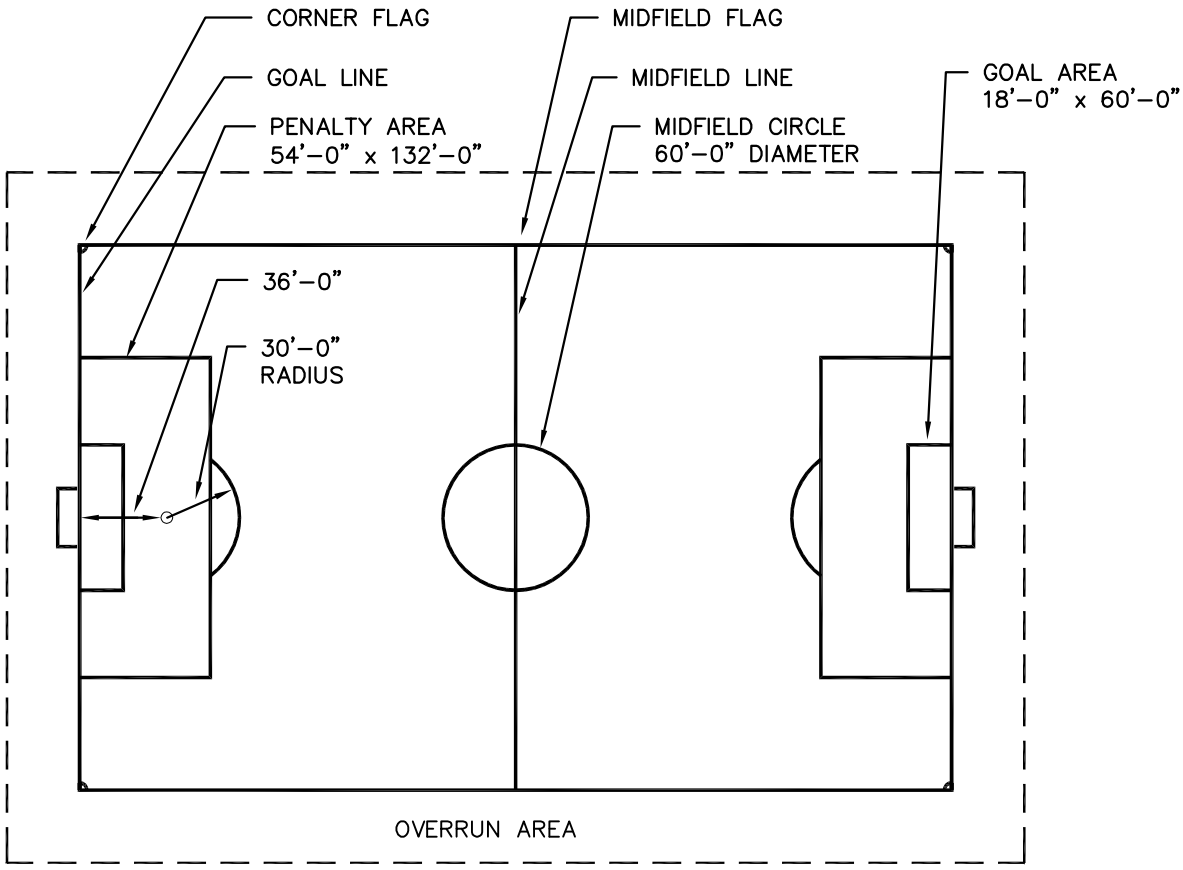
NOTES:

1: 30' OVER–RUN AREA ON ALL SIDES DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE BETWEEN 1% – 1.5%. SLOPES CREATED BY LASER GRADING.
4: GOAL IS TO BE BSN SPORTS CATALOG NUMBER BS–CLB248WT OR APPROVED EQUAL

LARGE SOCCER FIELD DIMENSIONS

PF–6.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

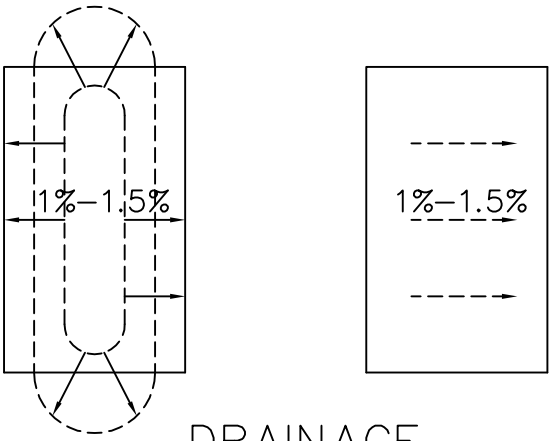


NOTES:

ALL DIMENSIONS ARE TO THE INSIDE EDGE OF LINES.

ALL LINES SHALL BE 2" WIDE AND MARKED WITH A WHITE NON–TOXIC MATERIAL WHICH IS NOT INJURIOUS TO THE EYES OR SKIN.

PREFERENCE IF FOR OVER–RUN AREA NOT TO EXCEED 3% SLOPE

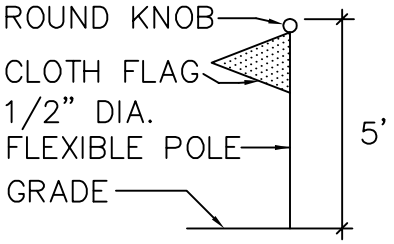


DRAINAGE

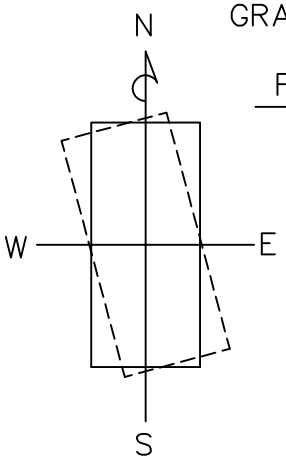
LEGEND

——→ 1ST PREFERENCE

– – –→ 2ND PREFERENCE



FLAG DETAIL

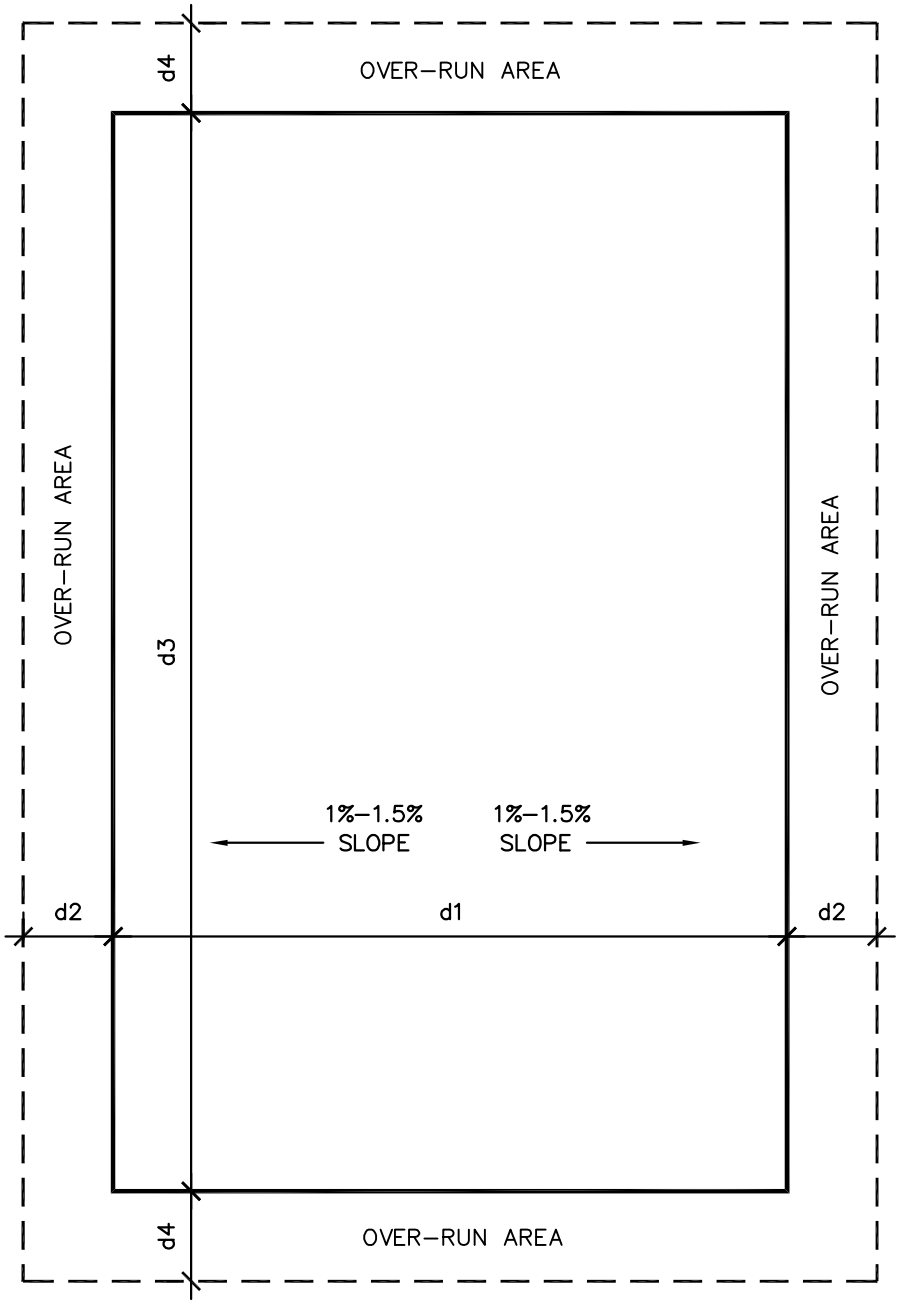


ORIENTATION

LARGE SOCCER FIELD LAYOUT

PF–6.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 138'
d2: 30'
d3: 228'
d4: 30'

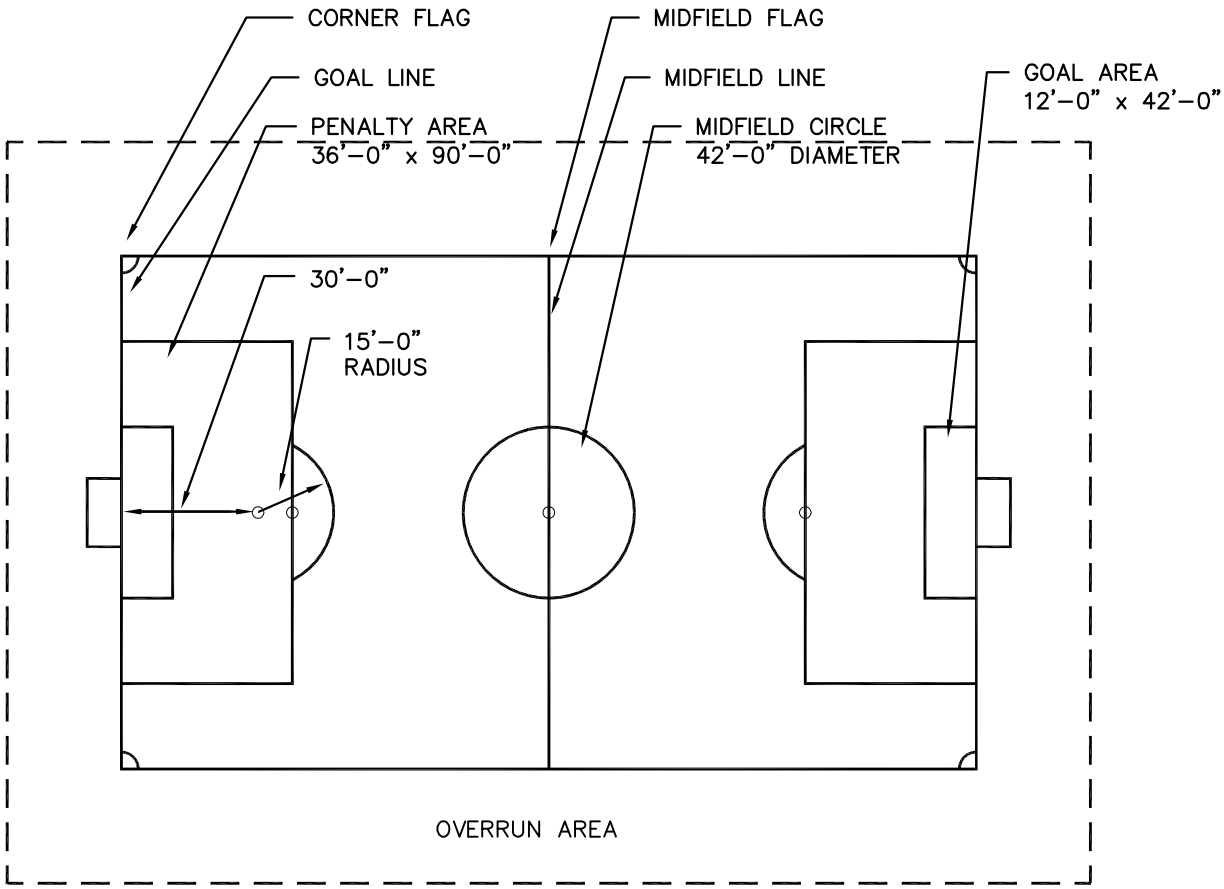
NOTES:

1: 30' OVER–RUN AREA ON ALL SIDES DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE BETWEEN 1% – 1.5%. SLOPES CREATED BY LASER GRADING.
4: GOAL TO BE BSN SPORTS CATALOG NUMBER BS–CLB248WT OR APPROVED EQUAL

SMALL SOCCER FIELD DIMENSIONS

PF–6.2

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

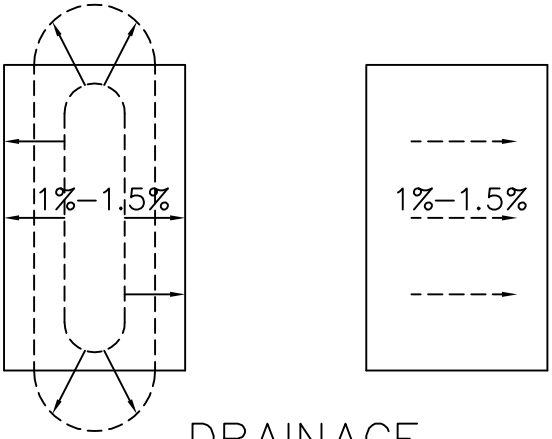


NOTES:

ALL DIMENSIONS ARE TO THE INSIDE EDGE OF LINES.

ALL LINES SHALL BE 2" WIDE AND MARKED WITH A WHITE NON–TOXIC MATERIAL WHICH IS NOT INJURIOUS TO THE EYES OR SKIN.

PREFERENCE IS FOR OVER–RUN AREA NOT TO EXCEED 3% SLOPE.

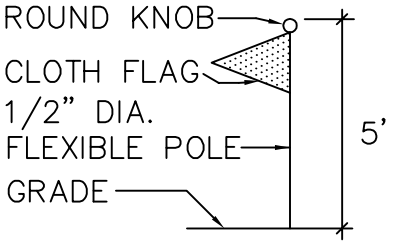


DRAINAGE

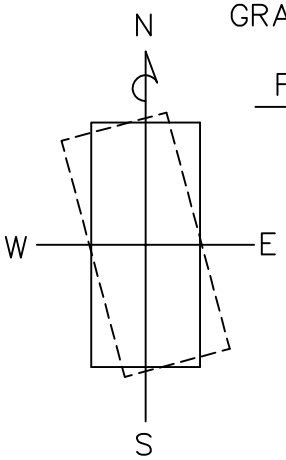
LEGEND

——→ 1ST PREFERENCE

– – –→ 2ND PREFERENCE



FLAG DETAIL

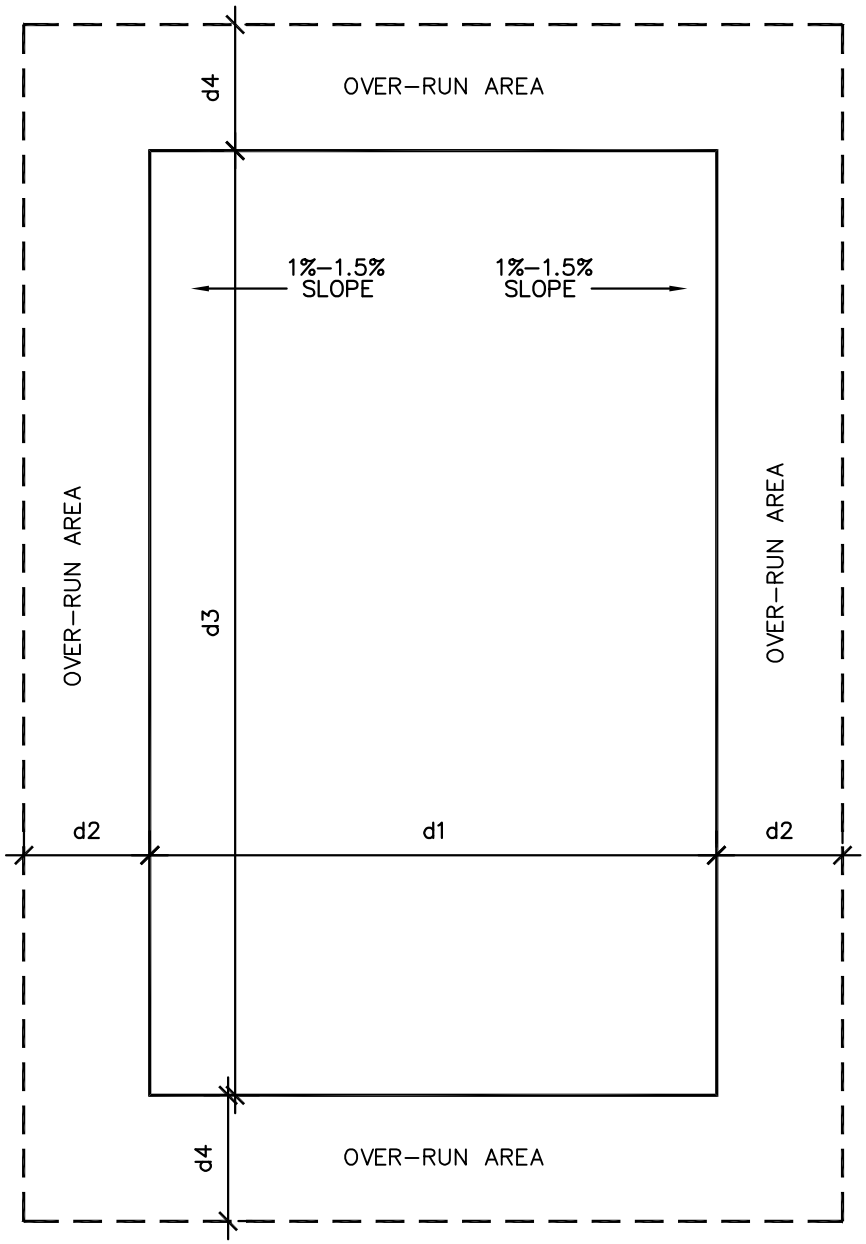


ORIENTATION

SMALL SOCCER FIELD LAYOUT

PF–6.3

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 90'
d2: 20'
d3: 150'
d4: 20'

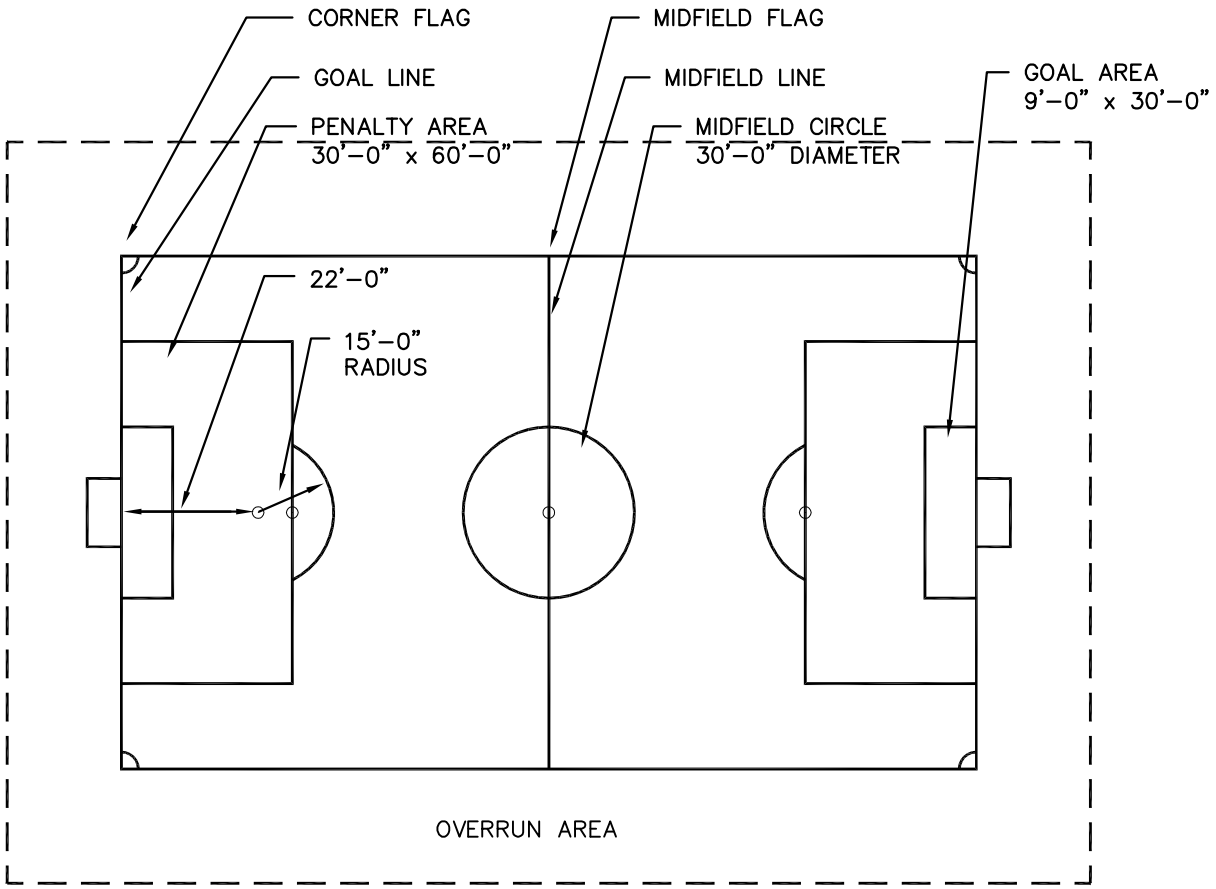
NOTES:

1: 20' OVER–RUN AREA ON ALL SIDES DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE BETWEEN 1% – 1.5%. SLOPES CREATED BY LASER GRADING.
4: GOAL TO BE BSN SPORTS CATALOG NUMBER BS–CLB248WT OR APPROVED EQUAL.

U8MICRO SOCCER FIELD DIMENSIONS

PF–6.4

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

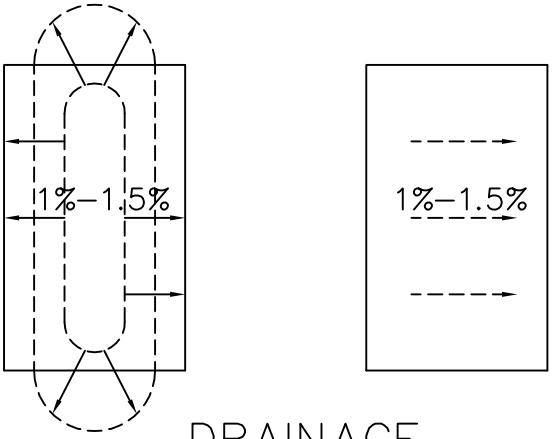


NOTES:

ALL DIMENSIONS ARE TO THE INSIDE EDGE OF LINES.

ALL LINES SHALL BE 2" WIDE AND MARKED WITH A WHITE NON–TOXIC MATERIAL WHICH IS NOT INJURIOUS TO THE EYES OR SKIN.

PREFERENCE IS FOR OVER–RUN AREA TO NOT EXCEED 3% SLOPE.

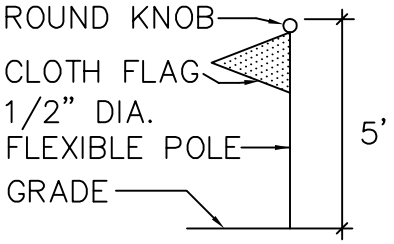


DRAINAGE

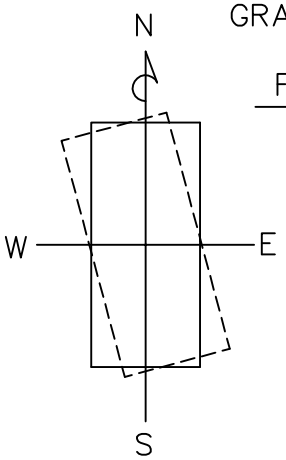
LEGEND

——→ 1ST PREFERENCE

– – –→ 2ND PREFERENCE



FLAG DETAIL

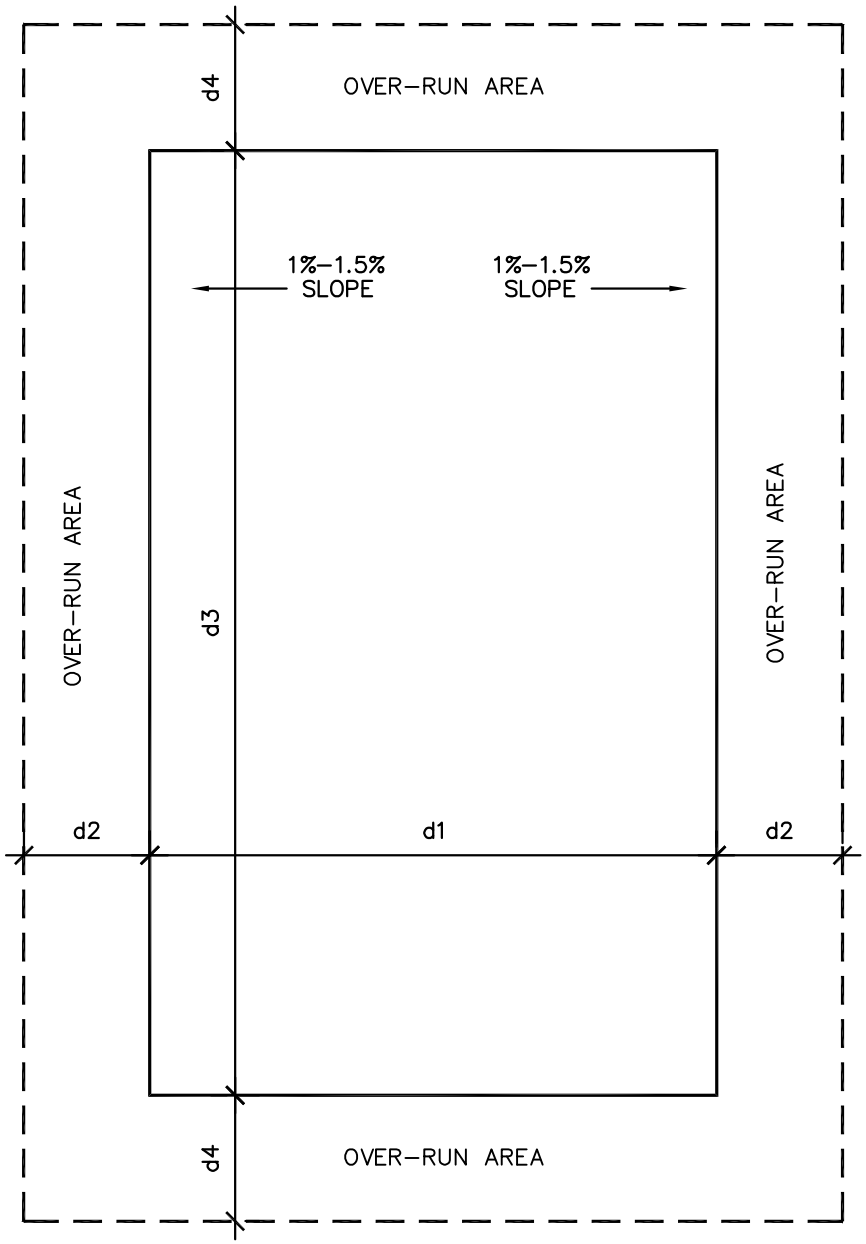


ORIENTATION

U8 SOCCER FIELD LAYOUT

PF–6.5

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 75'
d2: 20'
d3: 105'
d4: 20'

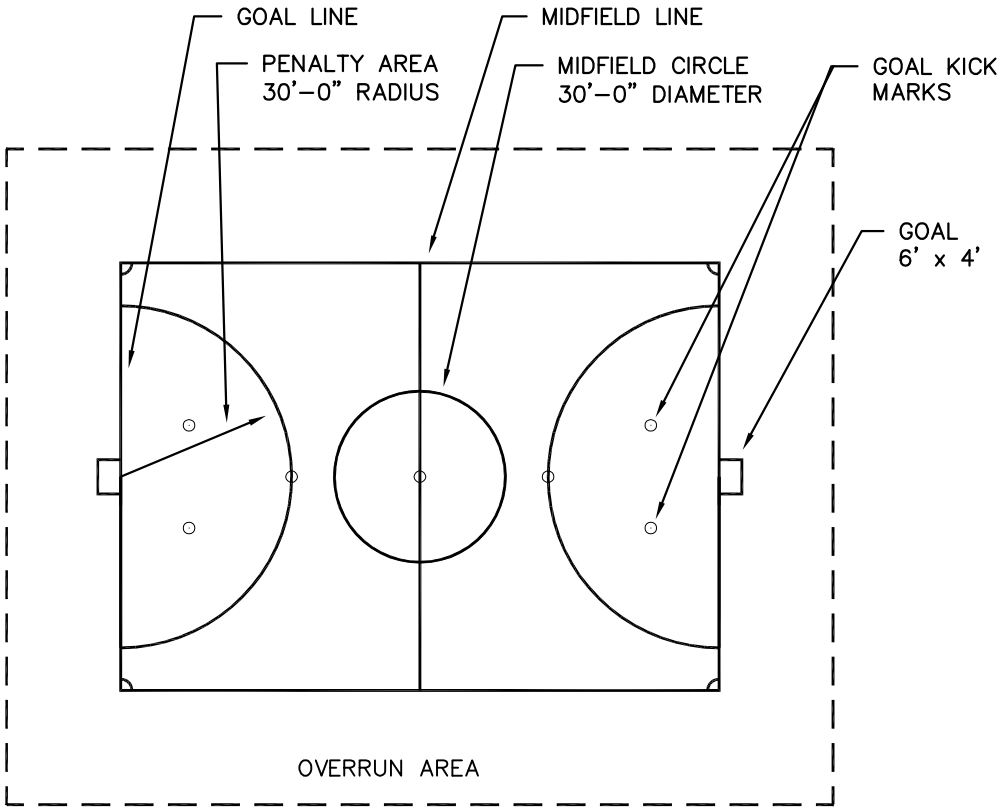
NOTES:

1: 20' SAFETY ZONE ON ALL SIDES DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR SAFETY ZONE AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE BETWEEN 1% – 1.5%. SLOPES CREATED BY LASER GRADING.
4: GOAL TO BE BSN SPORTS CATALOG NUMBER BS–CLB248WT OR APPROVED EQUAL.

U6/U7 SOCCER FIELD DIMENSIONS

PF–6.6

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

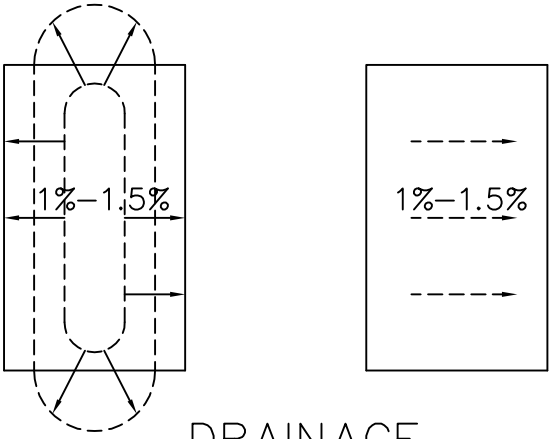


NOTES:

ALL DIMENSIONS ARE TO THE INSIDE EDGE OF LINES.

ALL LINES SHALL BE 2" WIDE AND MARKED WITH A WHITE NON–TOXIC MATERIAL WHICH IS NOT INJURIOUS TO THE EYES OR SKIN.

PREFERENCE IS FOR OVER–RUN AREA TO NOT EXCEED 3% SLOPE

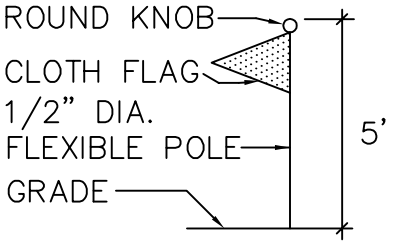


DRAINAGE

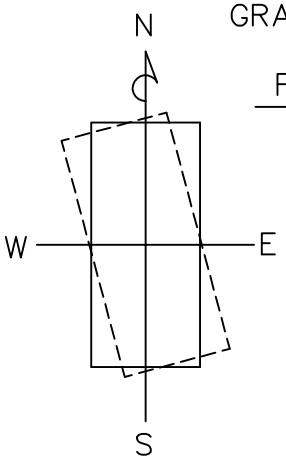
LEGEND

——→ 1ST PREFERENCE

– – –→ 2ND PREFERENCE



FLAG DETAIL

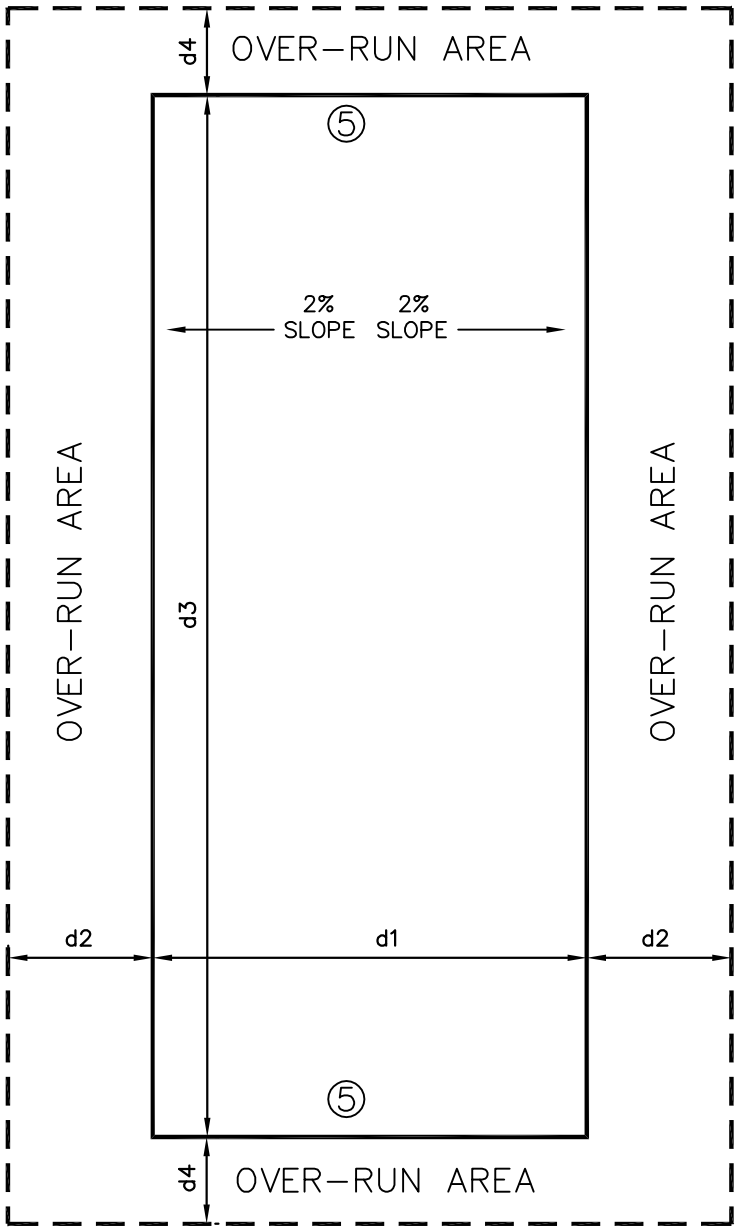


ORIENTATION

U6/U7 SOCCER FIELD LAYOUT

PF–6.7

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 150'
d2: 50'
d3: 360'
d4: 30'

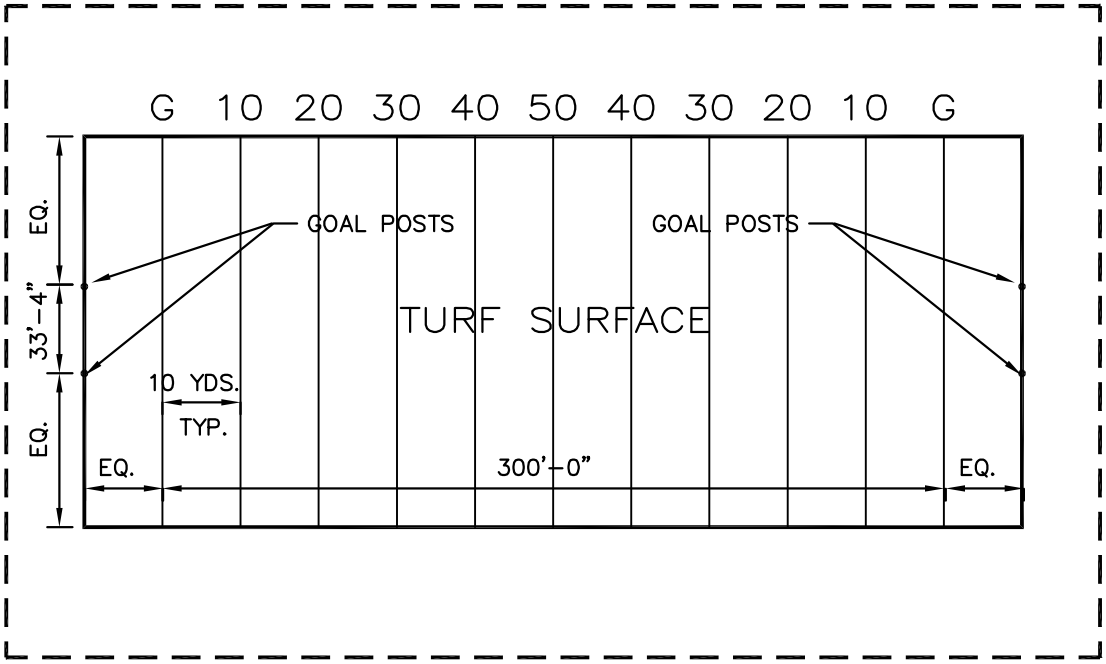
NOTES:

1: OVER–RUN AREA ON ALL SIDES
DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE 2%. SLOPES TO BE CREATED BY LASER GRADING IN TURTLEBACK OR SHED FASHION. SEE PF–8.1
4: CONTACT PRCS MAINTENANCE DIVISION MANAGER FOR LIST OF ACCESSORIES AND SOURCES.

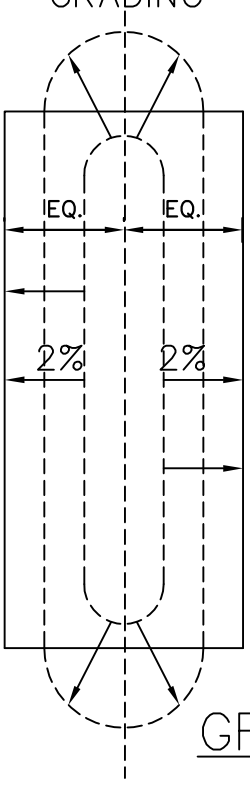
FOOTBALL FIELD DIMENSIONS

PF–8.0

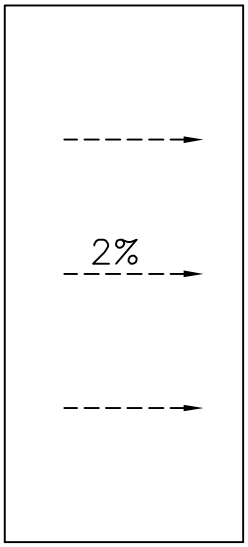
Department of Parks, Recreation and Community Services, Loudoun County, Virginia

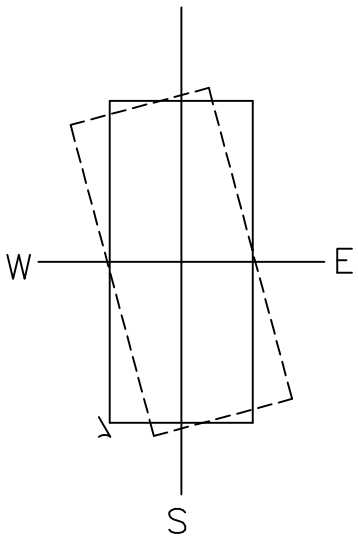


TURTLE BACK GRADING



SHED GRADING





ORIENTATION

GRADING TYPES

LEGEND

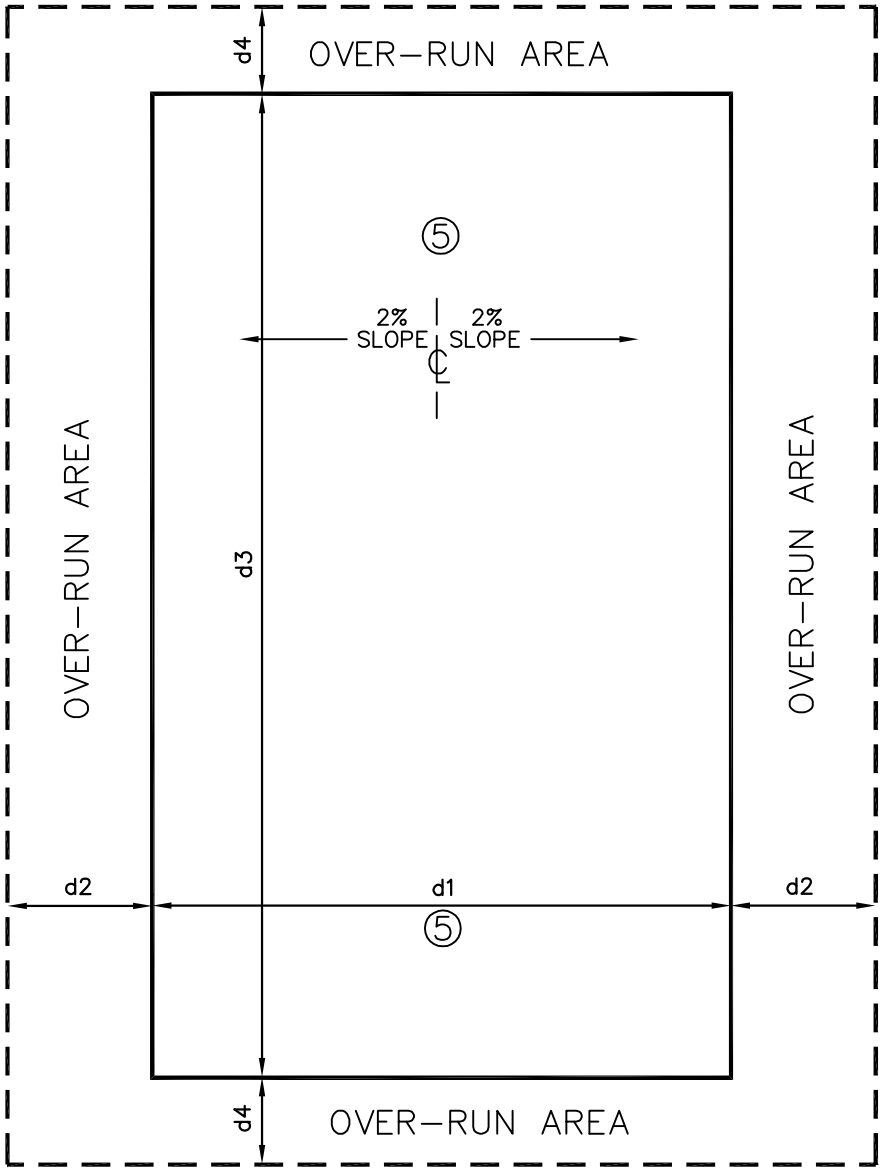
—— 1ST PREFERENCE

----2ND PREFERENCE

FOOTBALL FIELD LAYOUT

PF-8.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1: 180'–210'
d2: 50'
d3: 330'–360'
d4: 30'

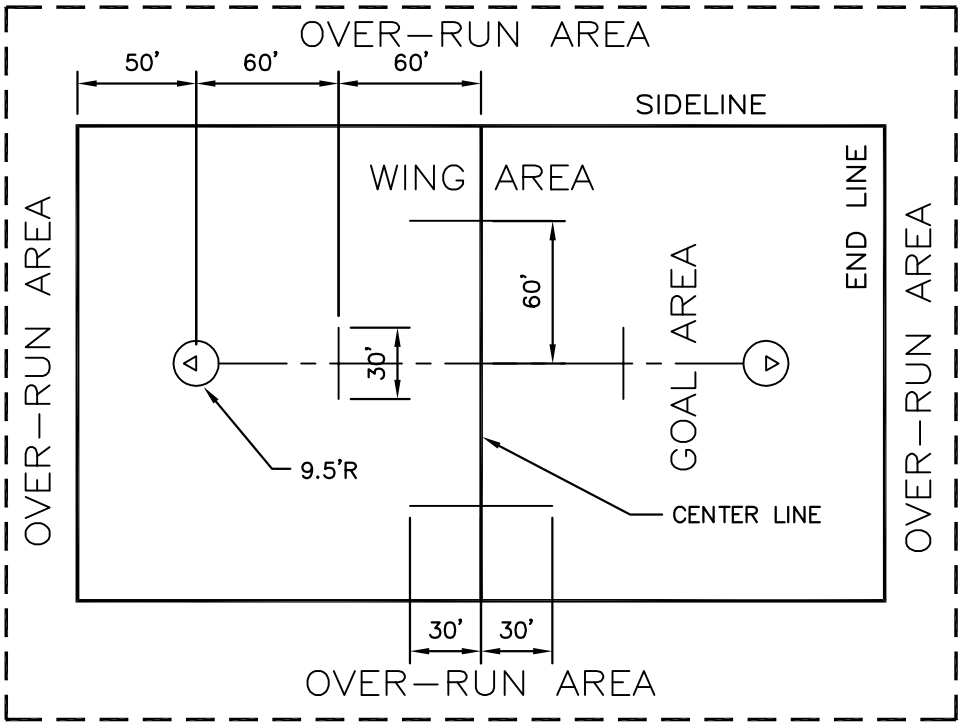
NOTES:

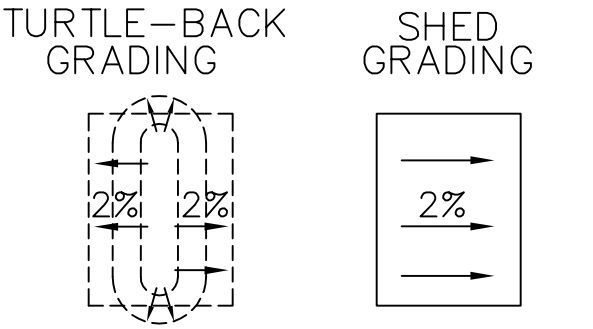
1: OVER–RUN AREA ON ALL SIDES – DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE 2%. SLOPES CREATED BY LASER GRADING IN TURTLEBACK OR SHED FASHION. SEE PF–9.1.
4: CONTACT PRCS MAINTENANCE DIVISION MANAGER FOR LIST OF ACCESSORIES AND SOURCES.
5: GOAL AREA, SEE PF–9.1 FOR LAYOUT.

LACROSSE FIELD DIMENSIONS

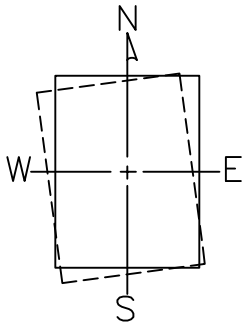
PF–9.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia





GRADING TYPES



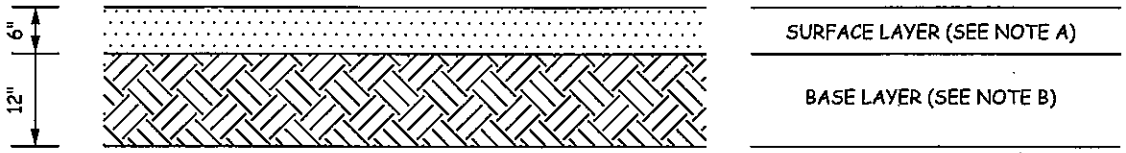
ORIENTATION

NOTES:

ALL DIMENSIONS ARE TO THE INSIDE EDGE OF LINES.

ALL LINES SHALL BE 2"WIDE AND MARKED WITH A WHITE NON–TOXIC MATERIAL WHICH IS NOT INJUROUS TO EYES OR SKIN

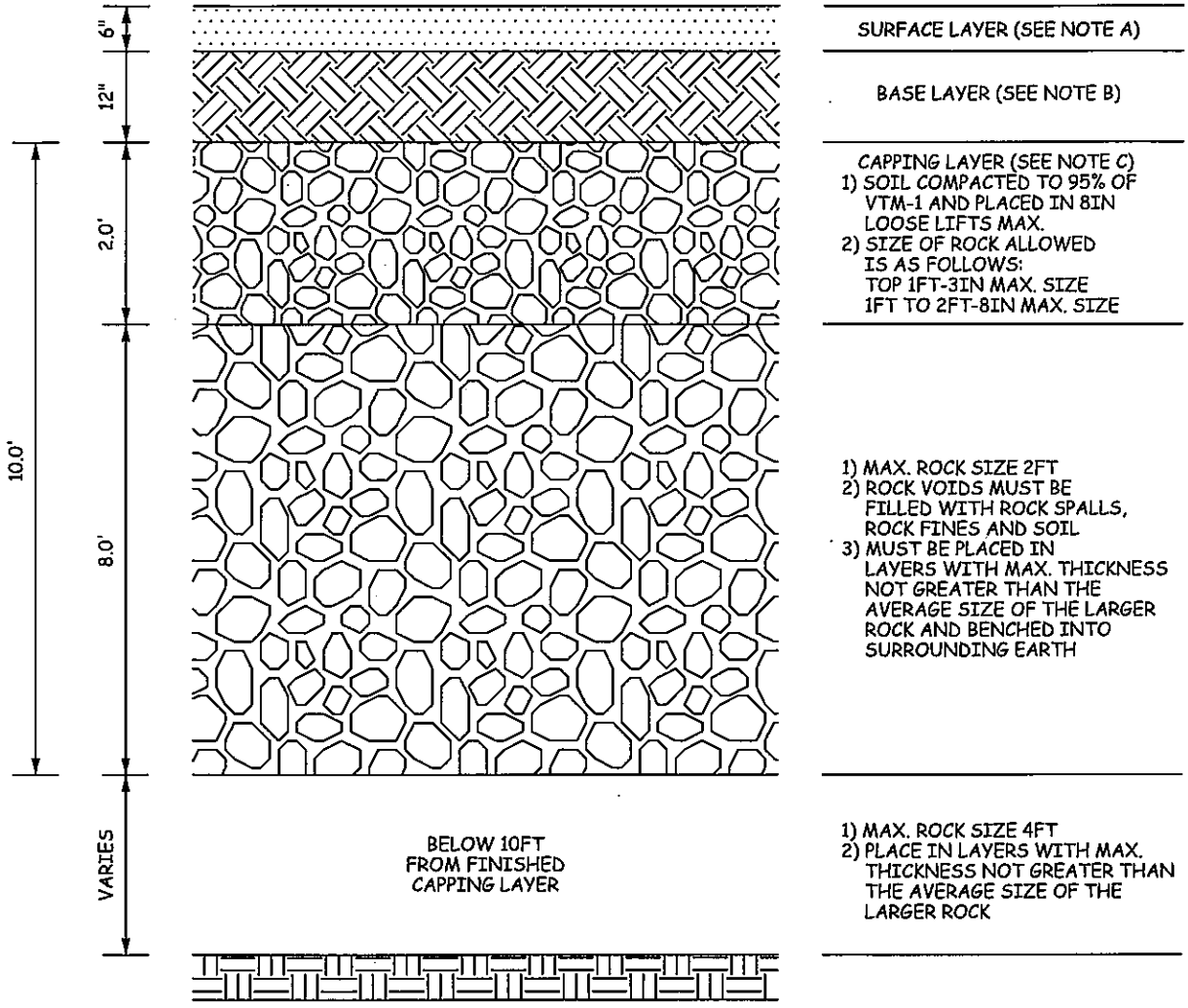
PREFERENCE IS FOR OVER–RUN AREA TO NOT EXCEED 3% SLOPE.



NOTES:

A. THE SURFACE LAYER SHALL BE IMPORTED OR MODIFIED TOPSOIL MATERIAL WHICH: IS FREE OF ROCK, GRAVEL, GLASS, STICKS; SHALL HAVE APPROXIMATELY 2 PERCENT ORGANIC CONTENT WITH A PH OF NOT LESS THAN 6.0; SHALL BE SANDY LOAM OR SILT LOAM PER USDA WITH A GRAIN SIZE ANALYSIS OF APPROXIMATELY 30% TO 65% SAND, 20% TO 40% SILT, AND 10% TO 15% CLAY.

B. THE BASE LAYER SHALL CONSIST OF MATERIAL WITH NO MORE THAN 5% COARSE FRAGMENTS DEFINED AS PARTICLES GREATER THAN 1 INCH NOMINAL SIZE; CLAY CONTENT 10% TO 30%; AND NO MORE THAN 3% DEBRIS (STICKS, TRASH, WOOD CHIPS, ETC. LESS THAN 3 INCHES IN ITS GREATEST DIMENSION).



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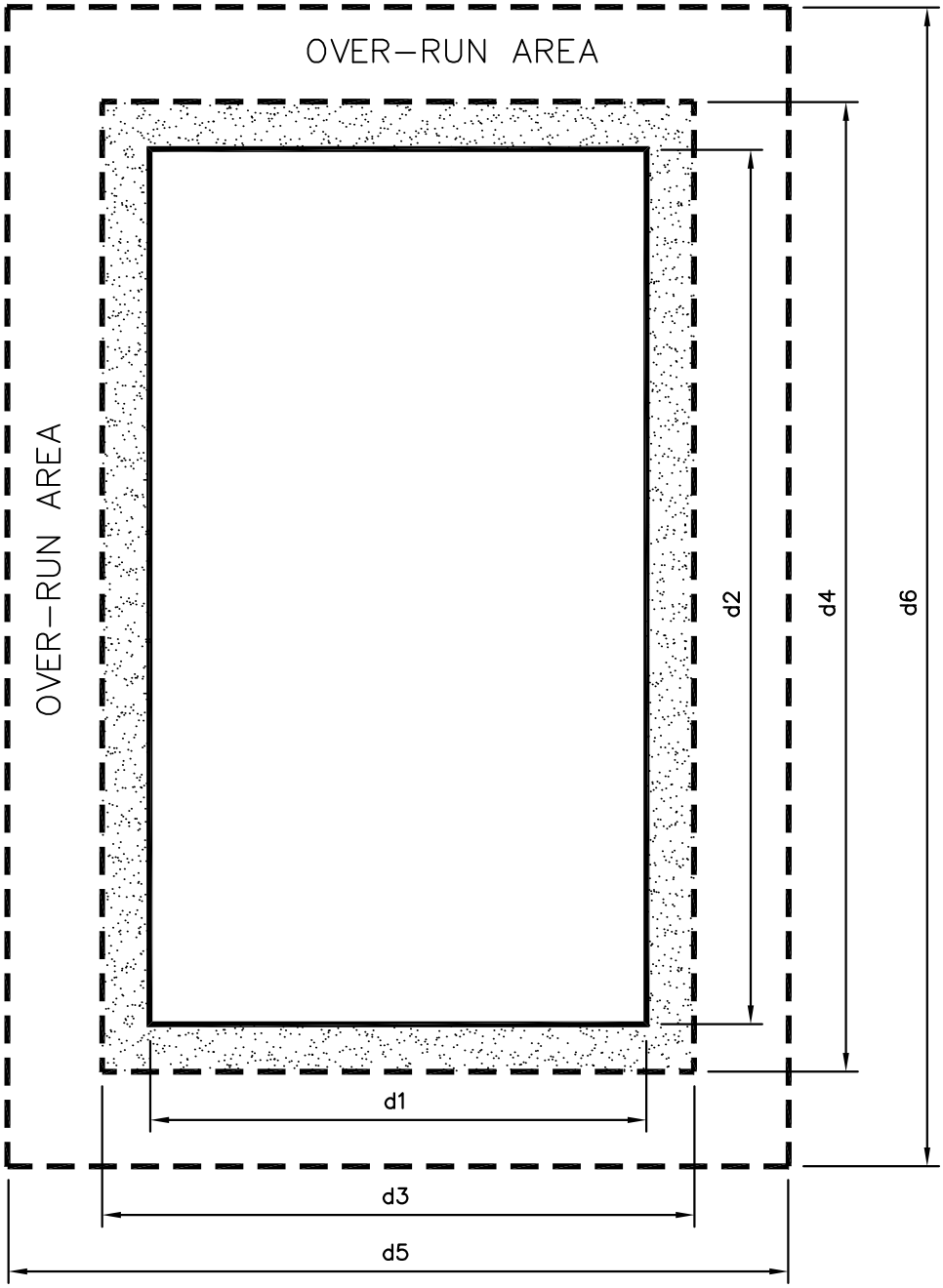
B. THE BASE LAYER SHALL CONSIST OF MATERIAL WITH NO MORE THAN 5% COARSE FRAGMENTS DEFINED AS PARTICLES GREATER THAN 1 INCH NOMINAL SIZE; CLAY CONTENT 10% TO 30%; AND NO MORE THAN 3% DEBRIS (STICKS, TRASH, WOOD CHIPS, ETC. LESS THAN 3 INCHES IN ITS GREATEST DIMENSION).

C. UPON COMPLETION OF THE CAPPING LAYER, THE GEOTECHNICAL ENGINEER OR TESTING AGENCY SHALL ISSUE A FINAL REPORT STATING WHETHER THE FILL OR BACKFILL MATERIAL HAS BEEN PLACED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

ATHLETIC FIELD DETAIL W/ BORROW

PF-10.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



DIMENSIONS:

d1:	42'
d2:	74'
d3:	50'
d4:	82'
d5:	66'
d6:	98'

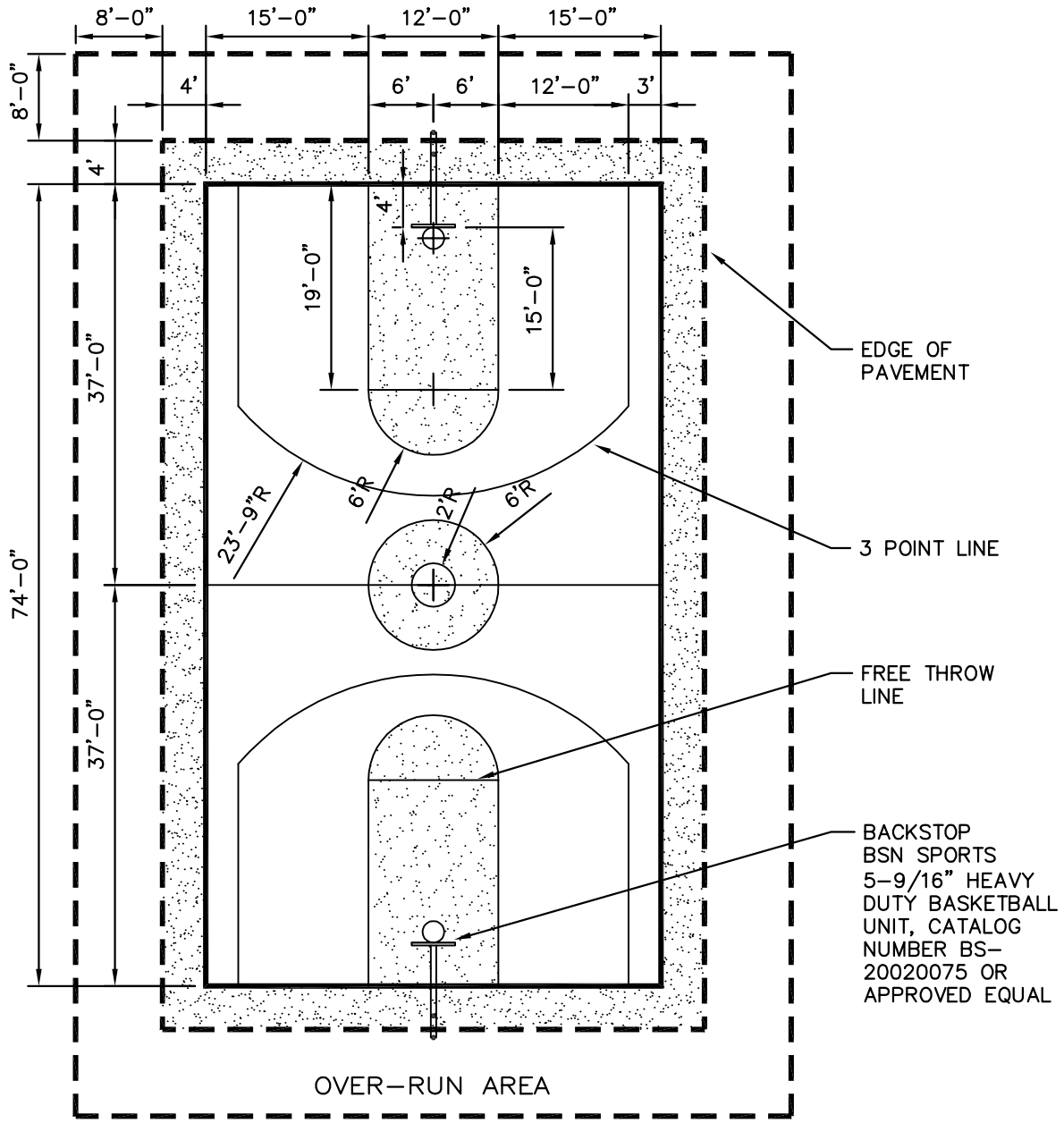
NOTES:

1: 12' OVER–RUN AREA ON ALL SIDES
DO NOT PLACE DRAINAGE FIXTURES OR OTHER FIXTURES WITHIN FIELD OR OVER–RUN AREA.
2: AT MULTI–PLEXED FACILITIES, ADDITIONAL CONSIDERATIONS MAY APPLY.
3: SLOPES TO BE BETWEEN 1% – 1.5%.

BASKETBALL COURT DIMENSIONS

CF–1.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



NOTES:

1: DIMENSIONS ARE TO INSIDE OF 2" WHITE PAINTED LINE

2: DO NOT USE METAL NETTING AT HOOPS

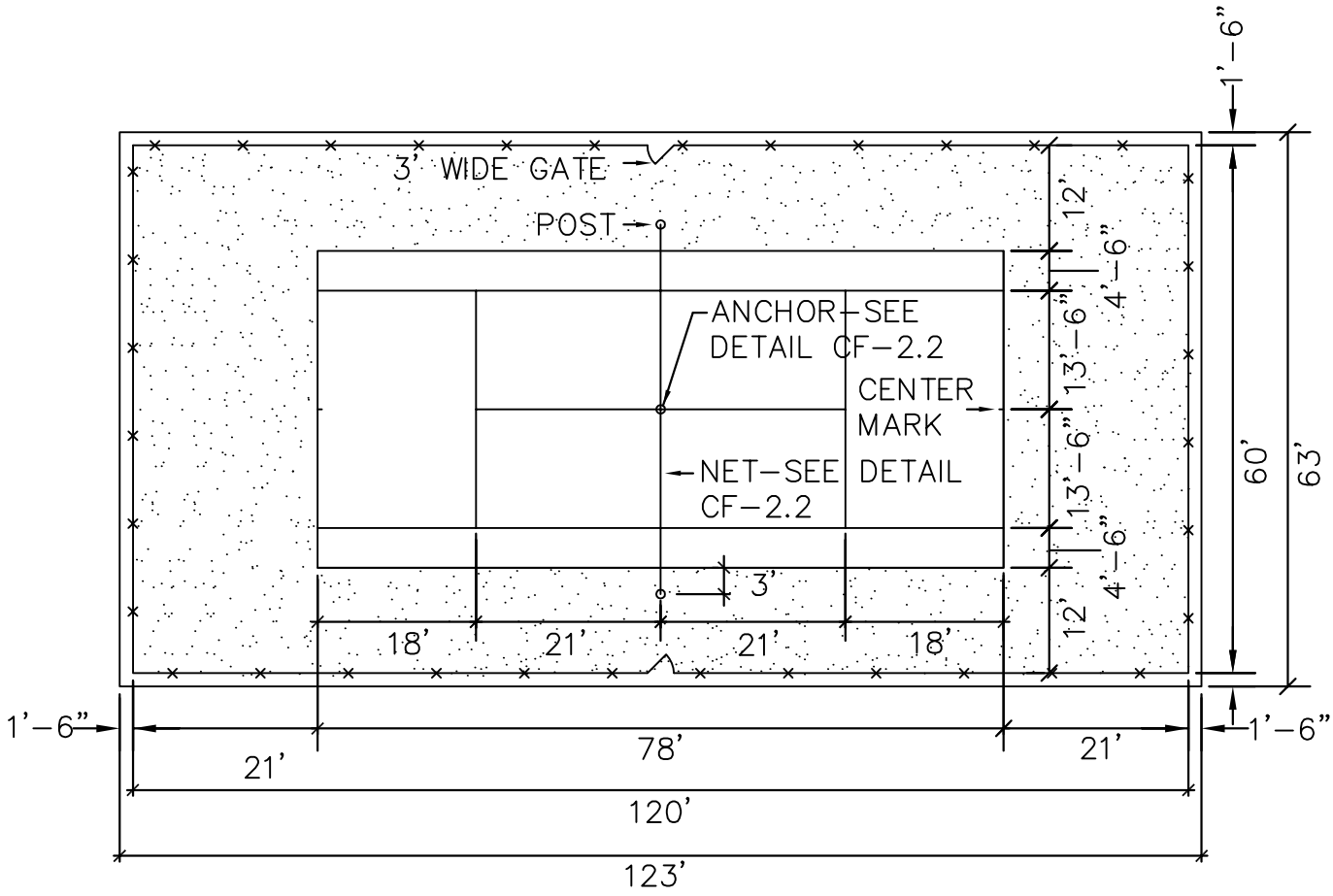
RED COLORCOAT

GREEN COLORCOAT

BASKETBALL COURT LAYOUT

CF–1.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



COLOR COAT – RED

COLOR COAT – GREEN

NOTES:

1: ALL MEASUREMENTS FOR COURT MARKINGS ARE TO THE OUTSIDE OF LINES EXCEPT FOR THOSE INVOLVING THE CENTER SERVICE LINE WHICH IS EQUALLY DIVIDED BETWEEN THE RIGHT AND LEFT SERVICE COURTS.

2: ALL COURT MARKINGS ARE TO BE 2" WIDE WHITE PAINTED LINES.

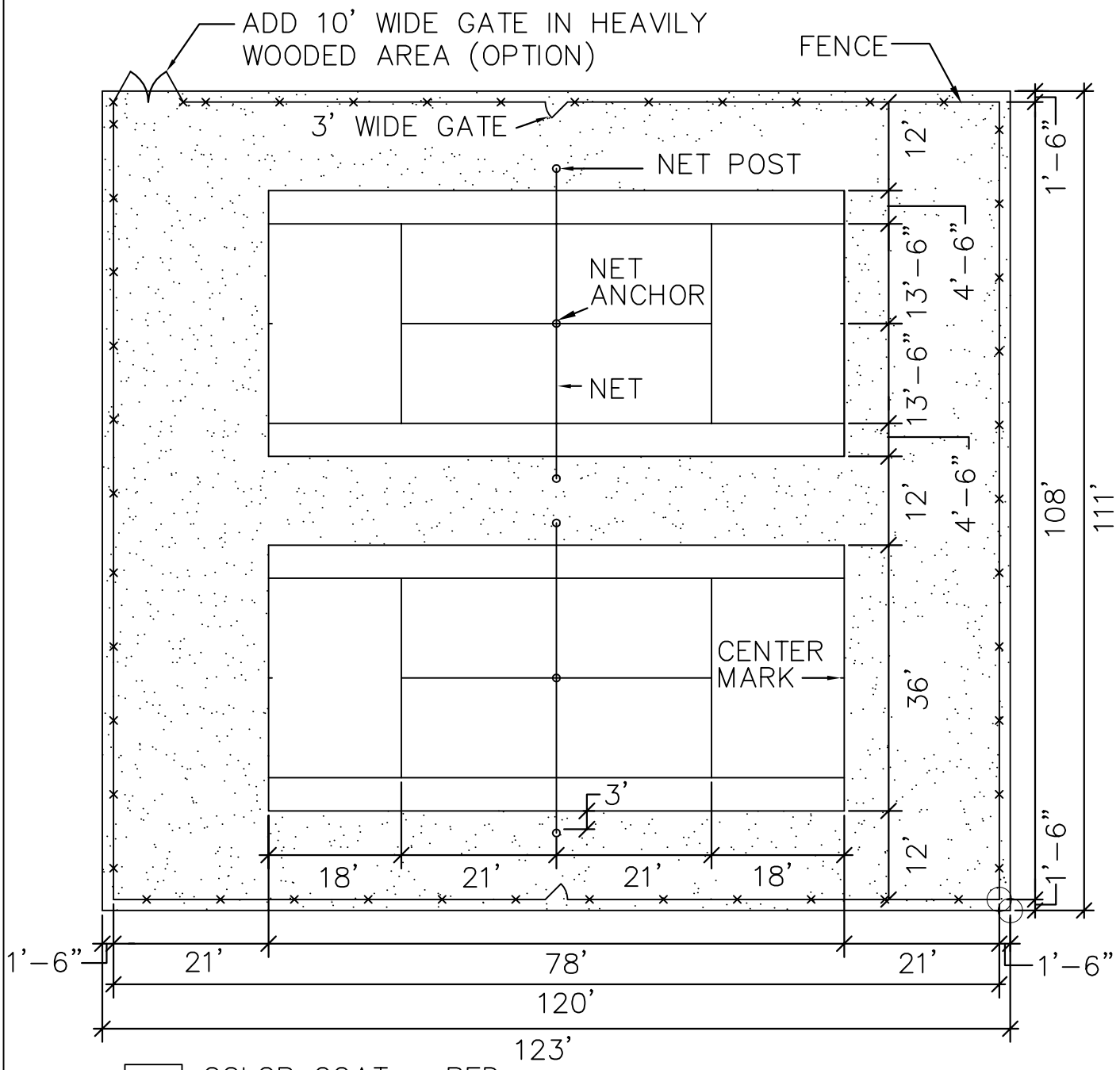
3: NO PREFERED ORIENTATION.

4: SEE CF-2.3 FOR COURT PAVING DETAIL

SINGLE TENNIS COURT LAYOUT

CF-2.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



NOTES:

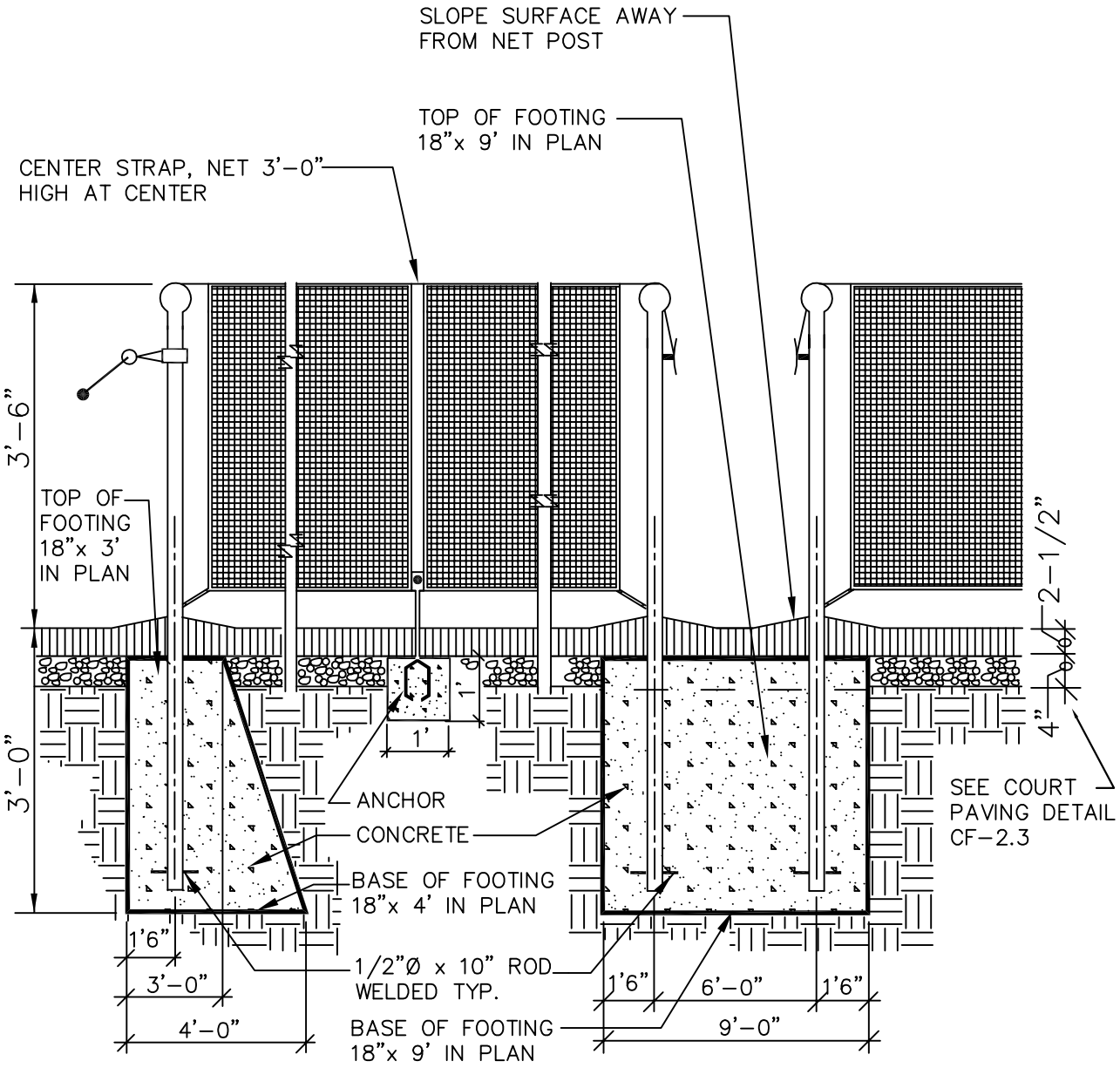
1: ALL MEASUREMENTS FOR COURT MARKINGS ARE TO THE OUTSIDE OF LINES EXCEPT FOR THOSE INVOLVING THE CENTER SERVICE LINE WHICH IS EQUALLY DIVIDED BETWEEN THE RIGHT AND LEFT SERVICE COURTS.

2: ALL COURT MARKINGS ARE TO BE 2" WIDE WHITE PAINTED LINES.

DOUBLE TENNIS COURT LAYOUT

CF-2.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

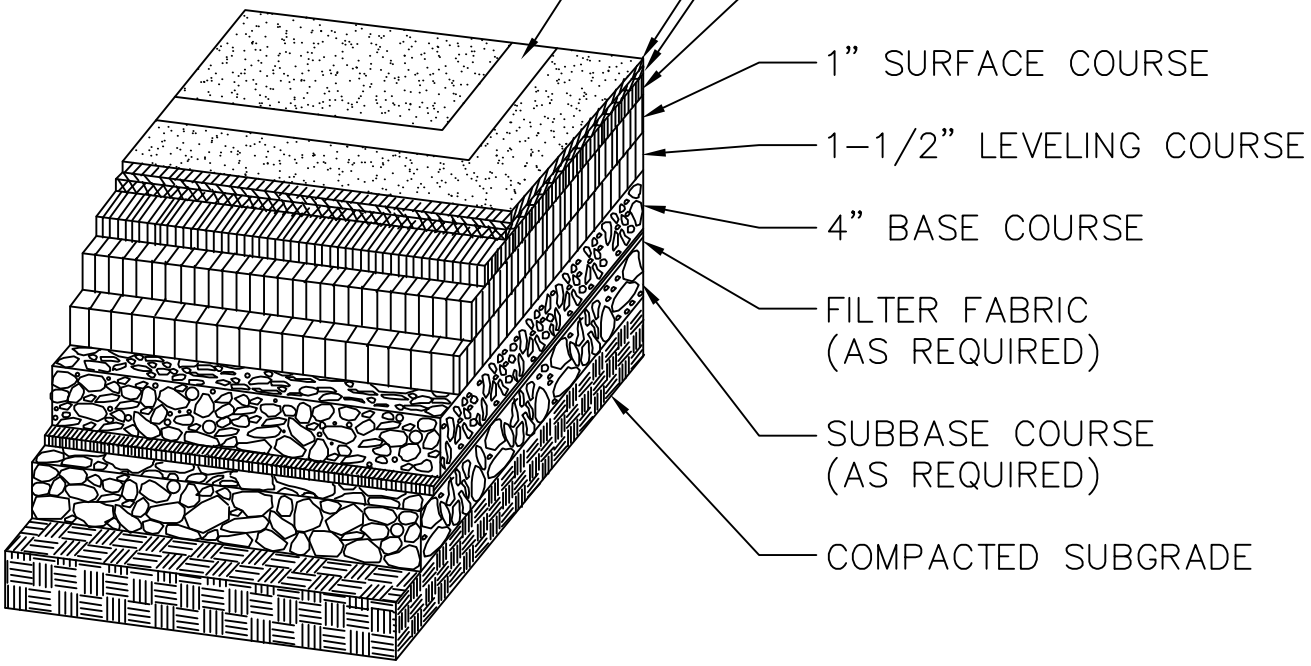


NOTE: CONTRACTOR TO SUPPLY NETS, POSTS, AND CENTER STRAPS

TENNIS COURT NET DETAILS

CF-2.2

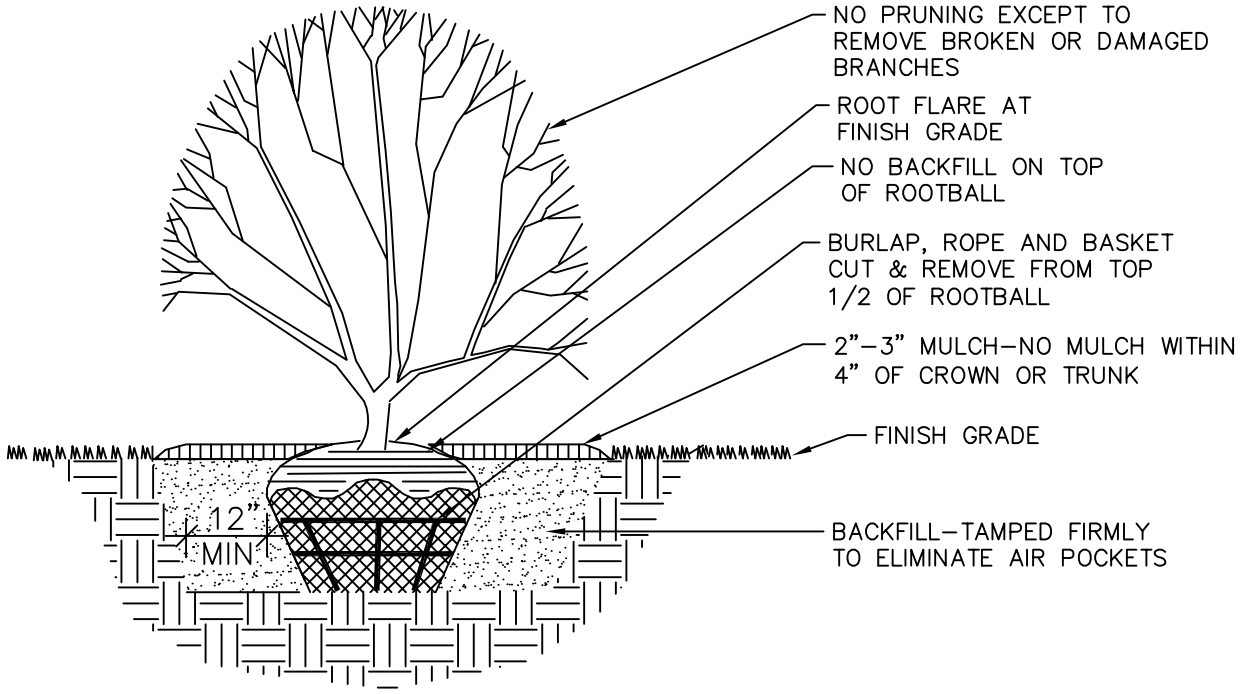
Department of Parks, Recreation and Community Services, Loudoun County, Virginia



COURT PAVING DETAIL

CF-2.3

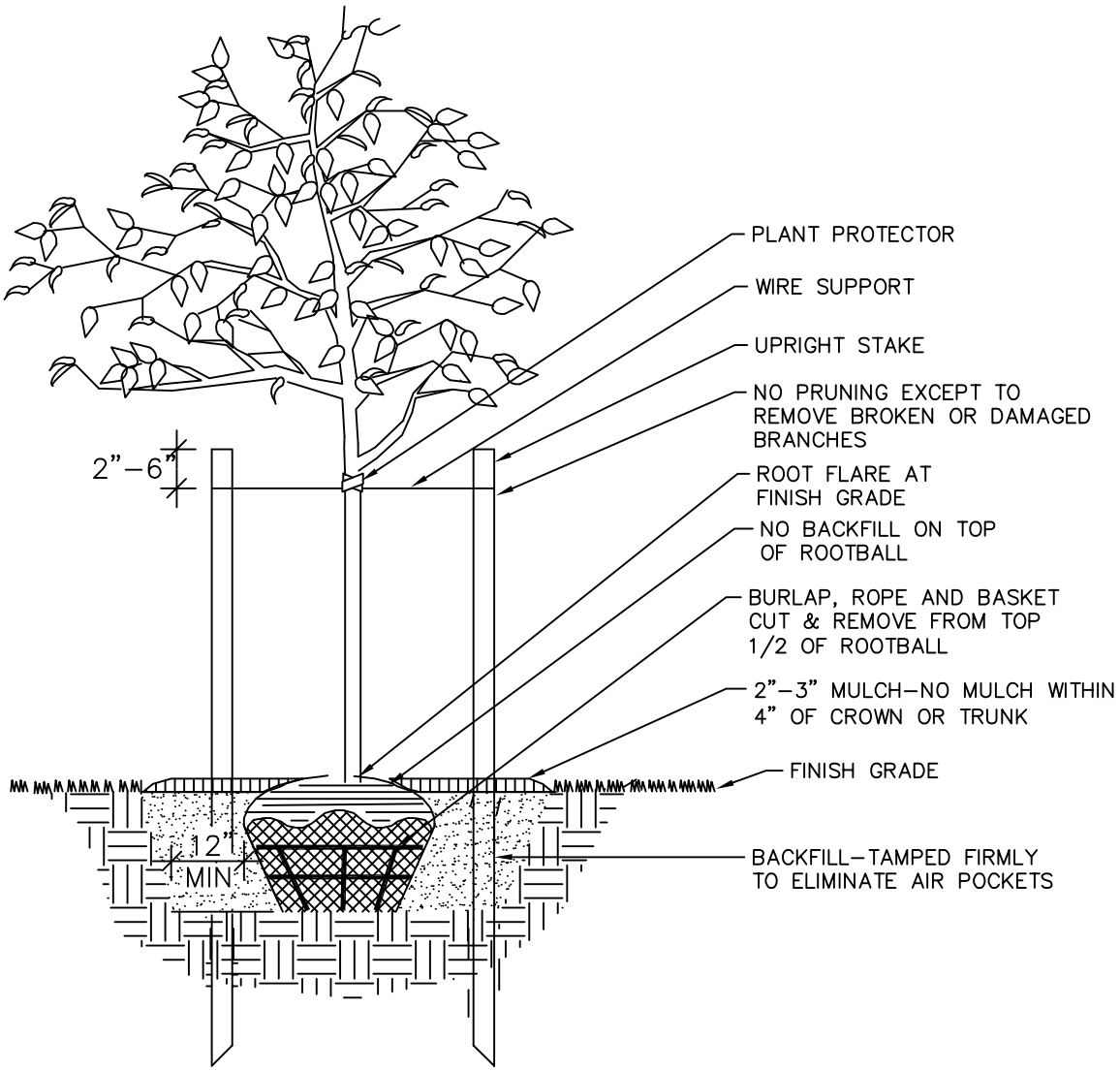
Department of Parks, Recreation and Community Services, Loudoun County, Virginia



SHRUB PLANTING DETAIL

LS–1.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



NOTES:

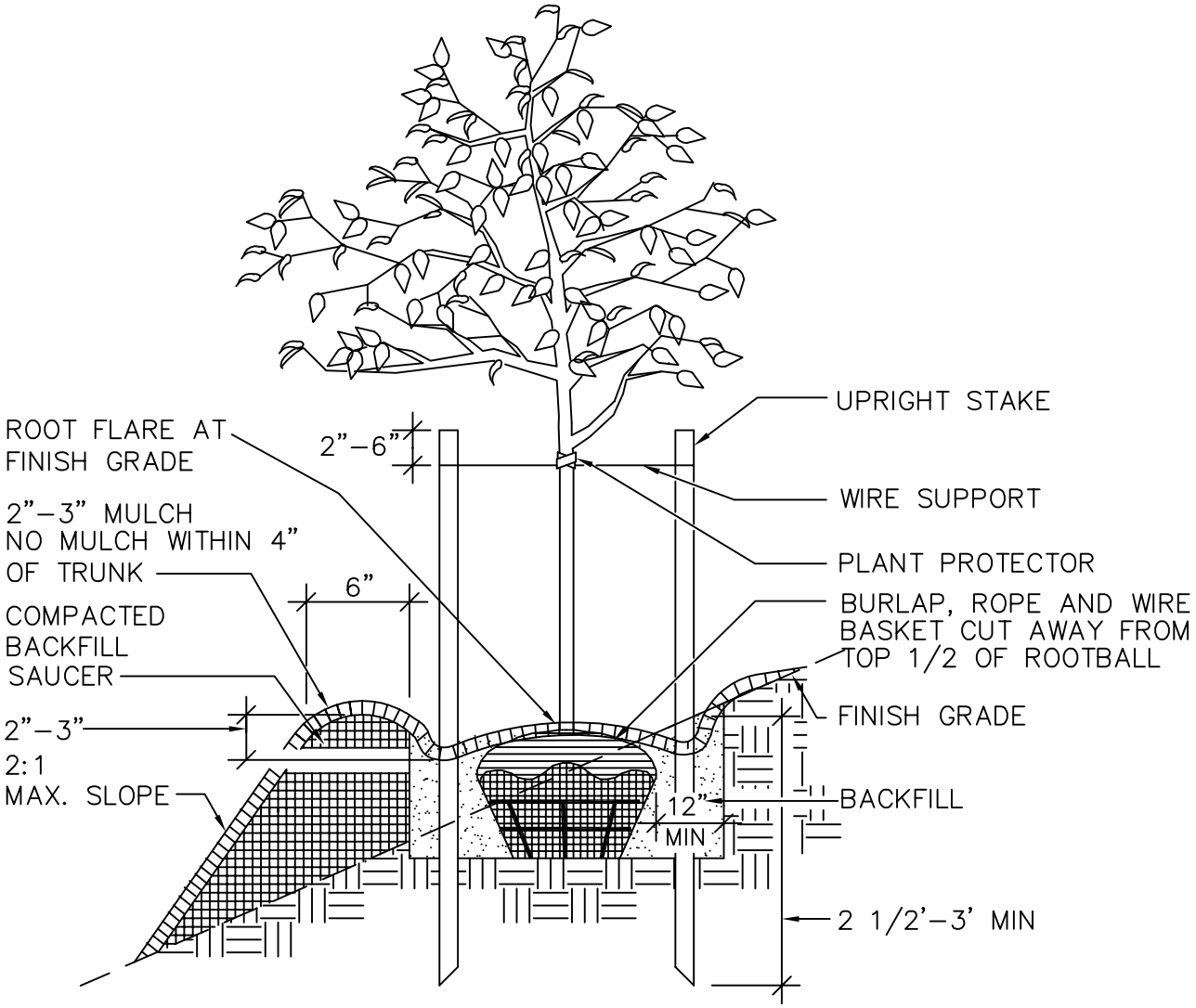
1: STAKING SHOWN ABOVE IS FOR TREES UP TO 3–1/2" CALIPER.

2: STAKING FOR TREES ABOVE 3–1/2" CALIPER TO BE TRIPLE GUYED WITH ANGLED STAKES.

TREE PLANTING & STAKING DETAIL

LS–2.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



NOTES:

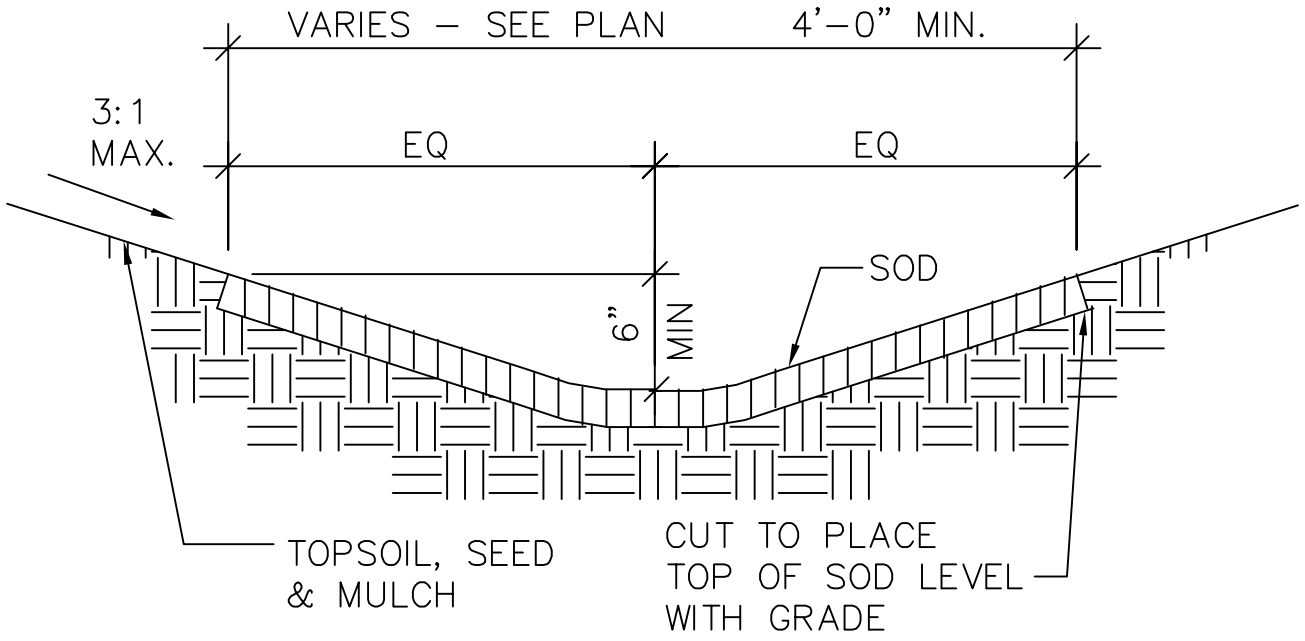
1: STAKING SHOWN ABOVE IS FOR TREES UP TO 3–1/2" CALIPER.

2: STAKING FOR TREES ABOVE 3–1/2" CALIPER TO BE TRIPLE GUYED WITH ANGLED STAKES.

TREE PLANTING SLOPE AREA

LS–3.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

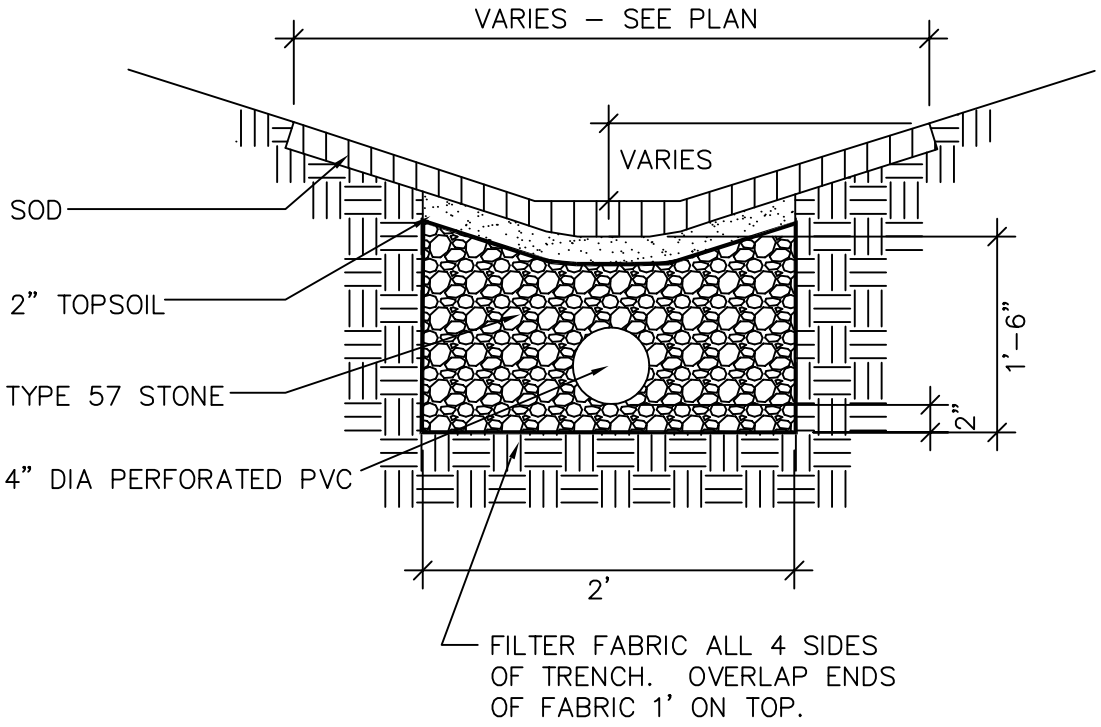


1. LAY SOD PERPENDICULAR TO FLOW OF WATER.
2. SOD TO BE PINNED IN PLACE.

SODDED SWALE

LS–4.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

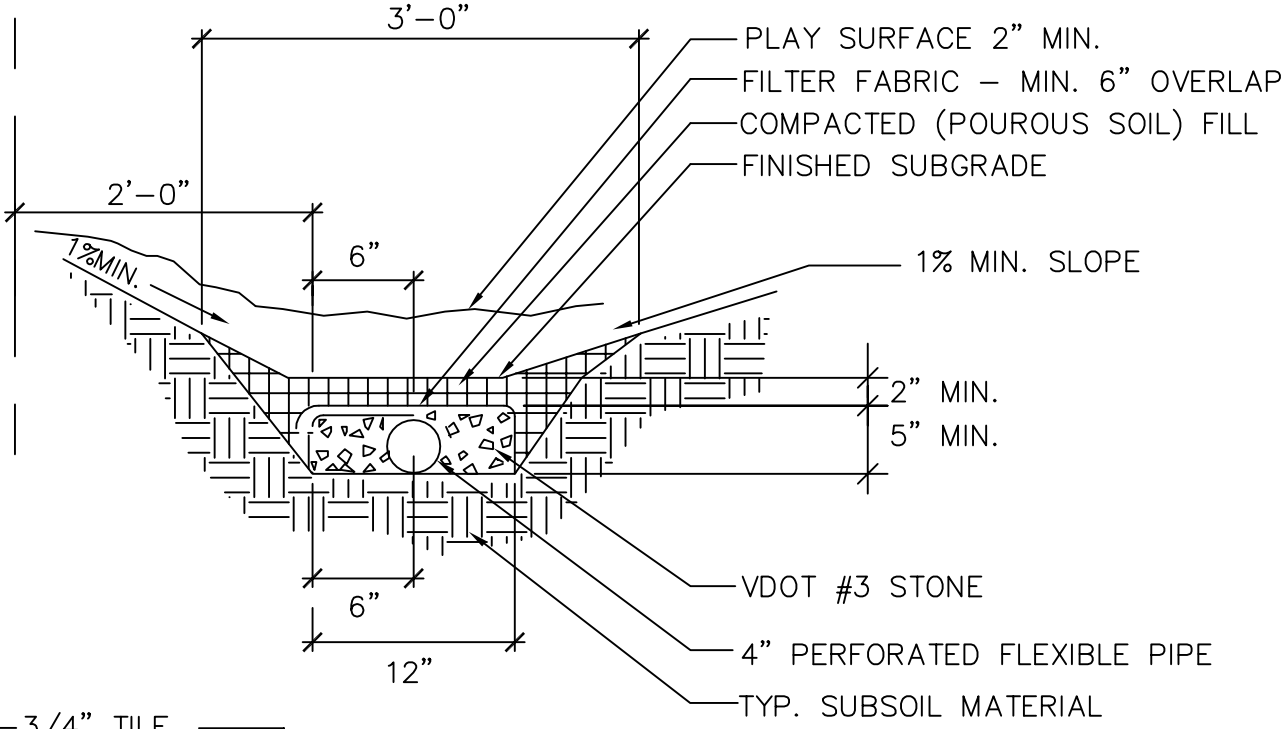


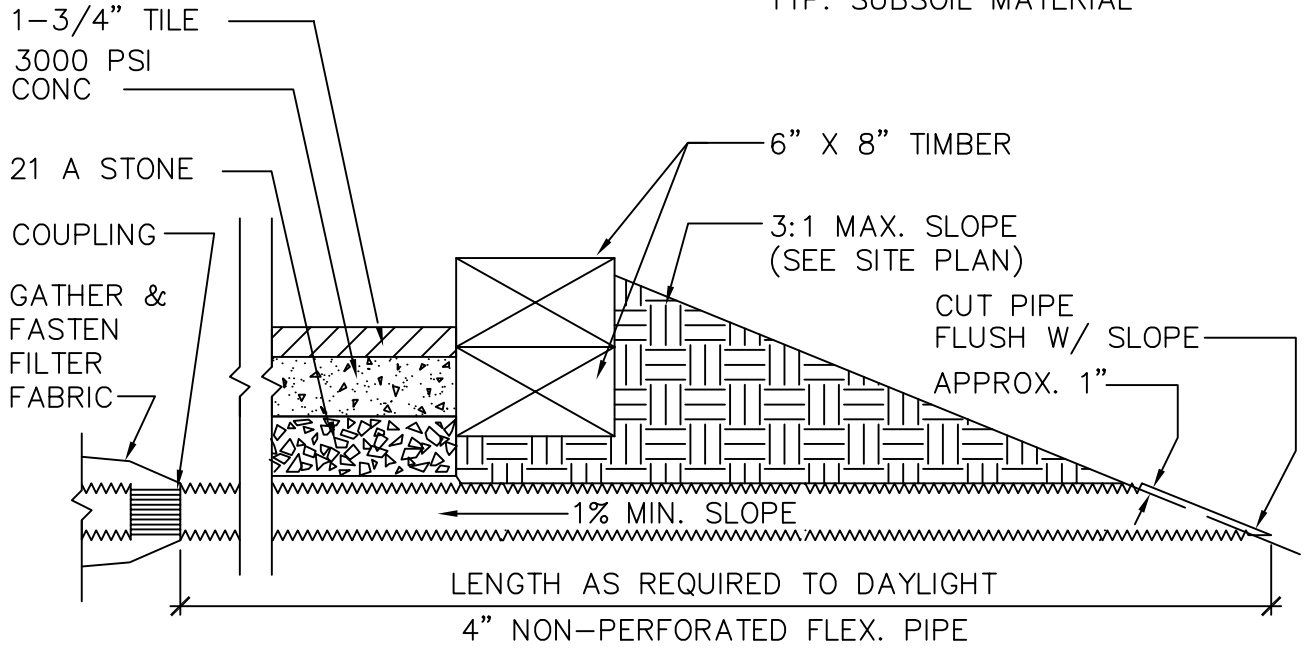
1. LAY SOD PERPENDICULAR TO FLOW OF WATER.
2. SOD TO BE PINNED IN PLACE.
3. SIZE UNDERDRAIN AND PIPE TO CATCHMENT AREA AND LONGITUDEINAL SLOPE.

UNDERDRAIN DETAIL

LS–5.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

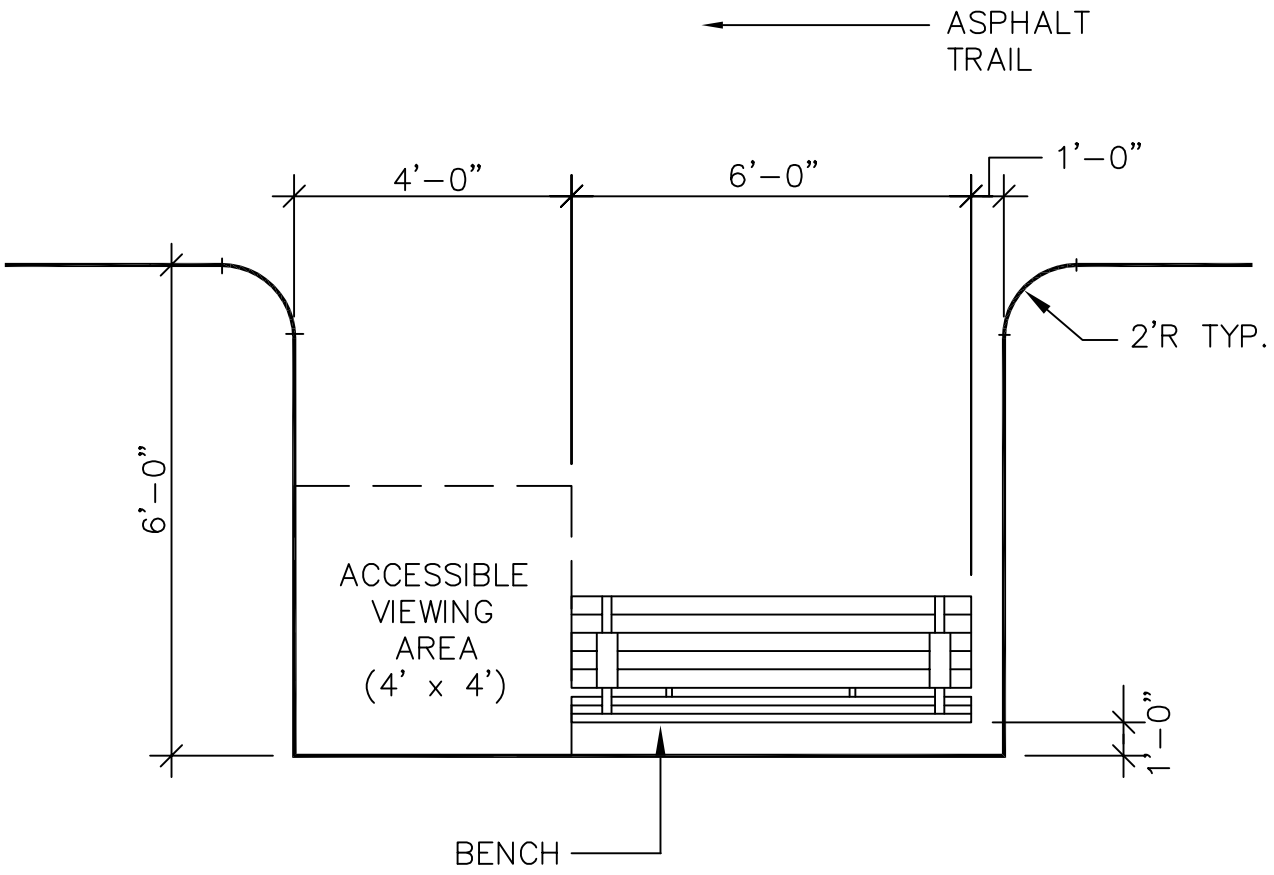




UNDERDRAIN

LS-6.0

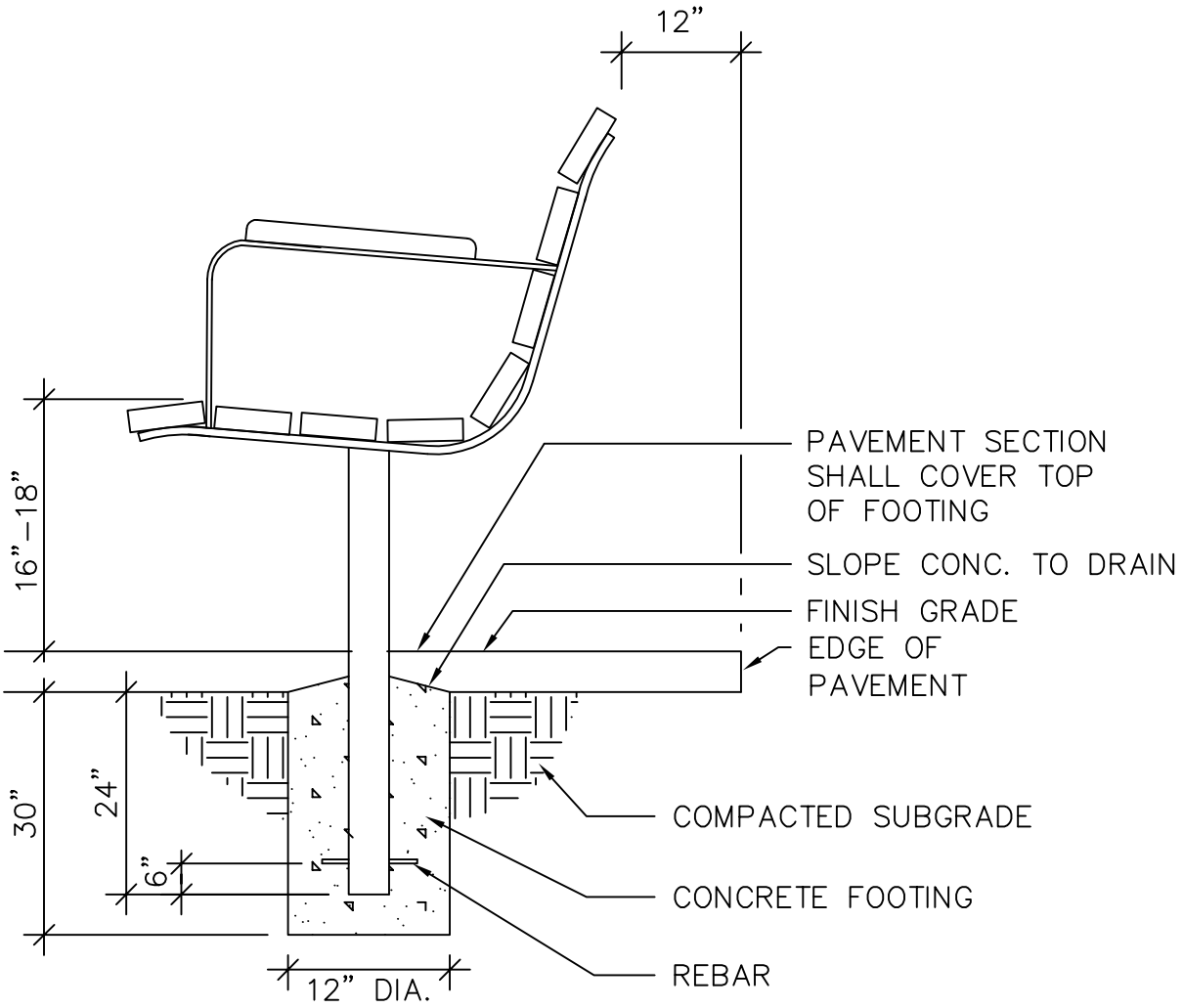
Department of Parks, Recreation and Community Services, Loudoun County, Virginia



BENCH ADJACENT TO TRAIL

LS–7.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

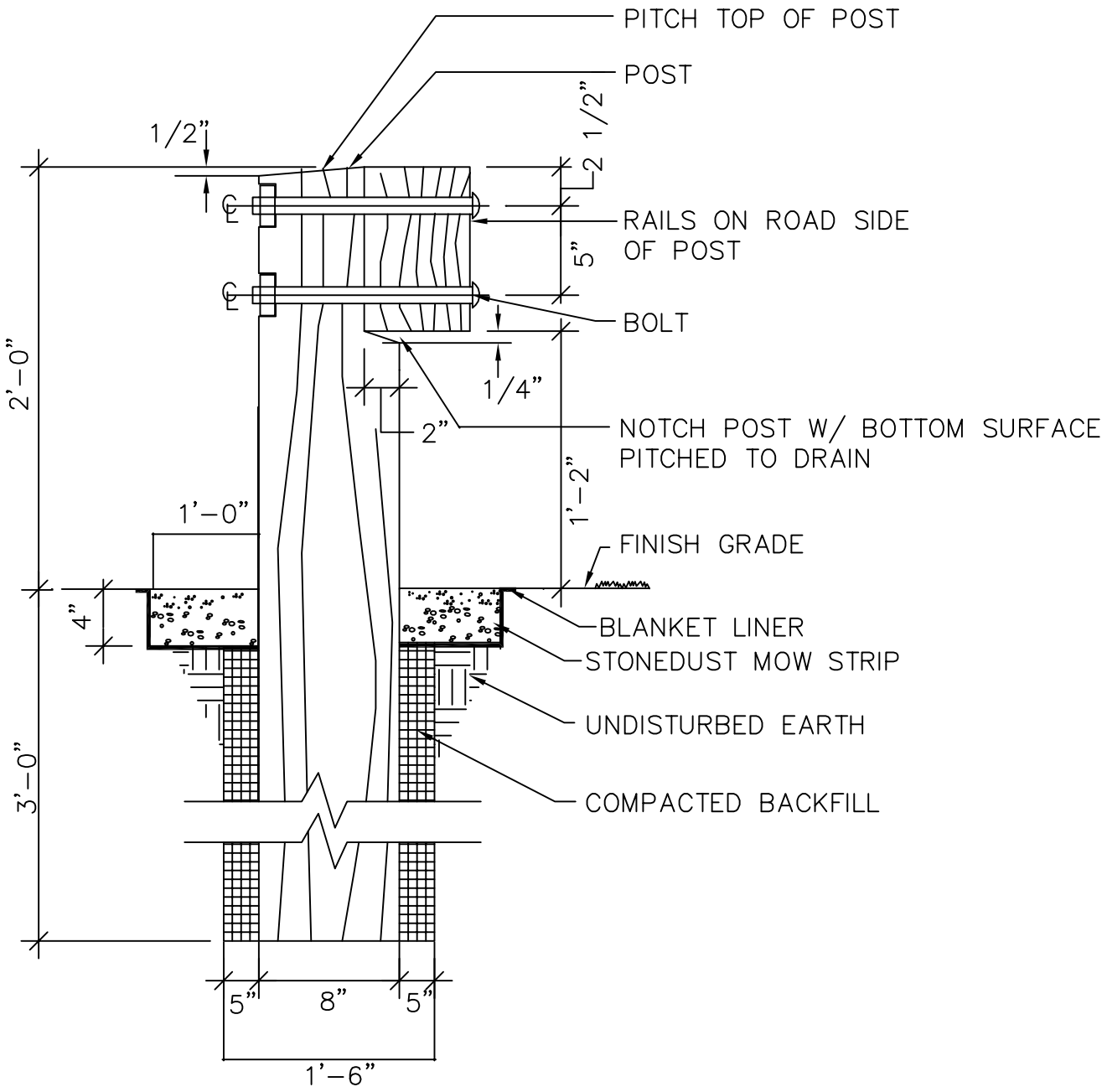


NOTE: CONTRACTOR MUST ORDER BENCH WITH SUPPORT POSTS TO BE OF SUFFICIENT LENGTH TO BE INSTALLED AS SHOWN.

BENCH FOOTING / PAVED AREA

LS–8.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

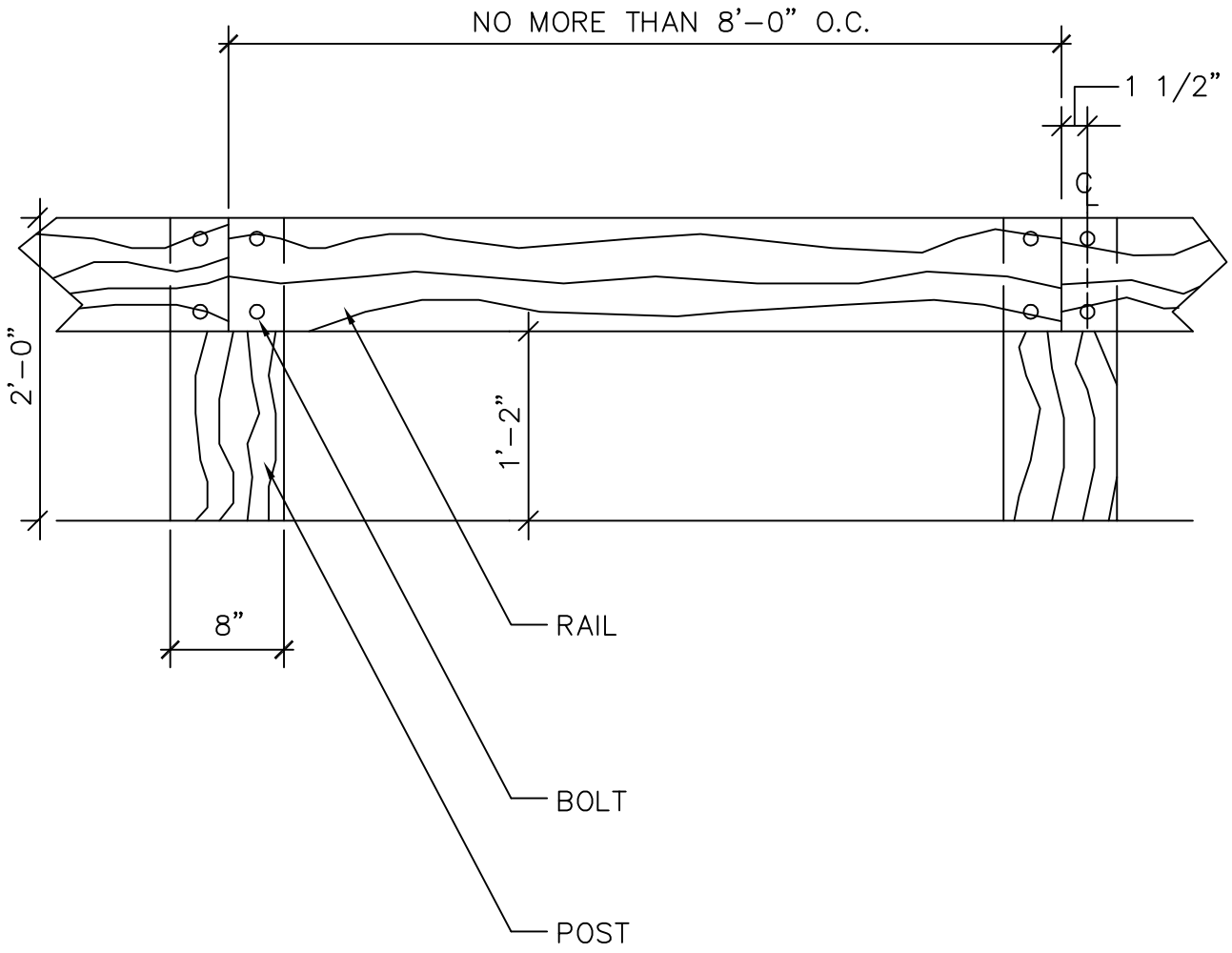


NOTE: DO NOT USE IN VDOT R.O.W.

WOOD GUARDRAIL – SECTION

LS–9.0

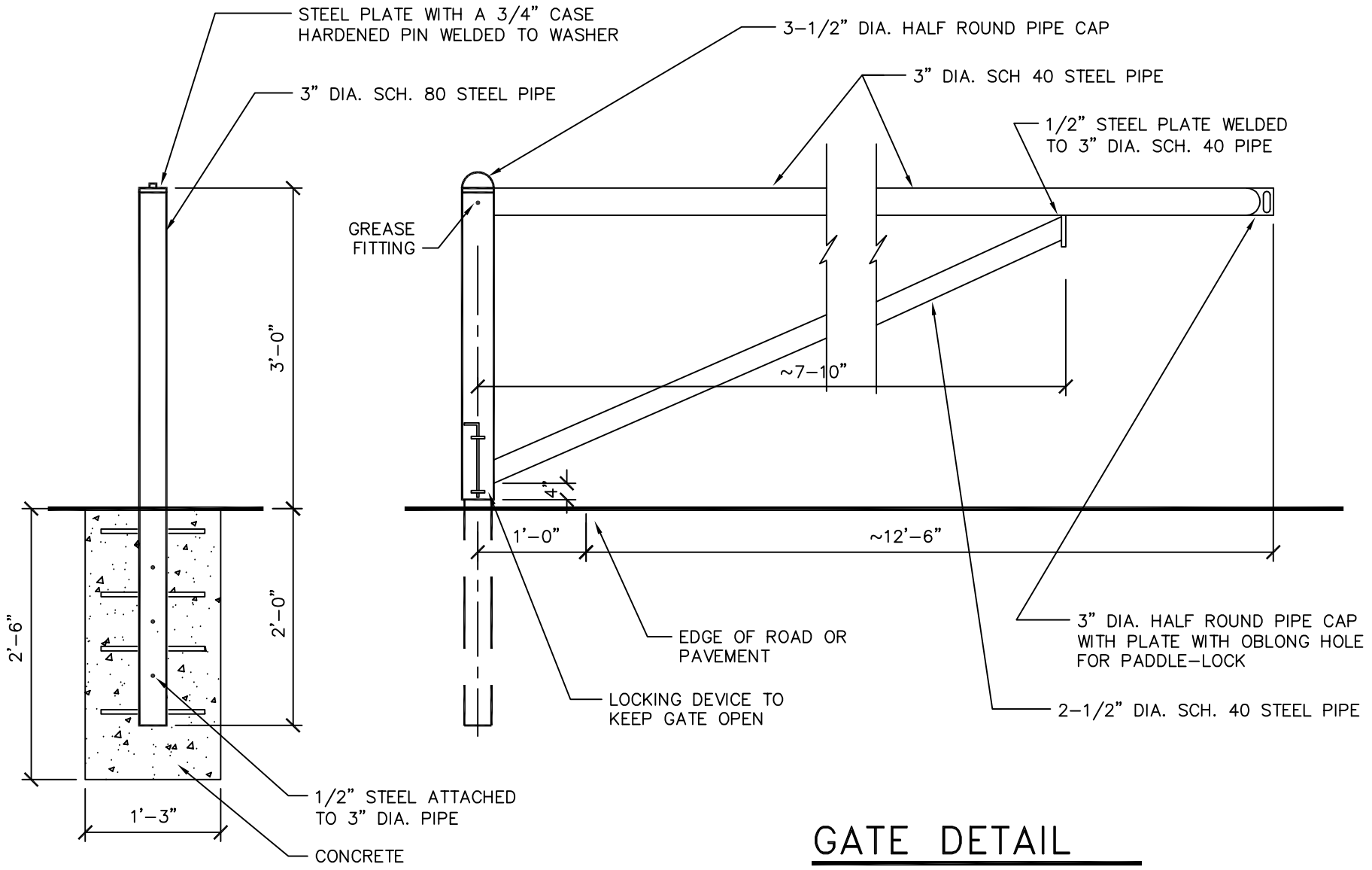
Department of Parks, Recreation and Community Services, Loudoun County, Virginia



WOOD GUARDRAIL – ELEVATION

LS–9.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia



ENTRANCE GATE

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

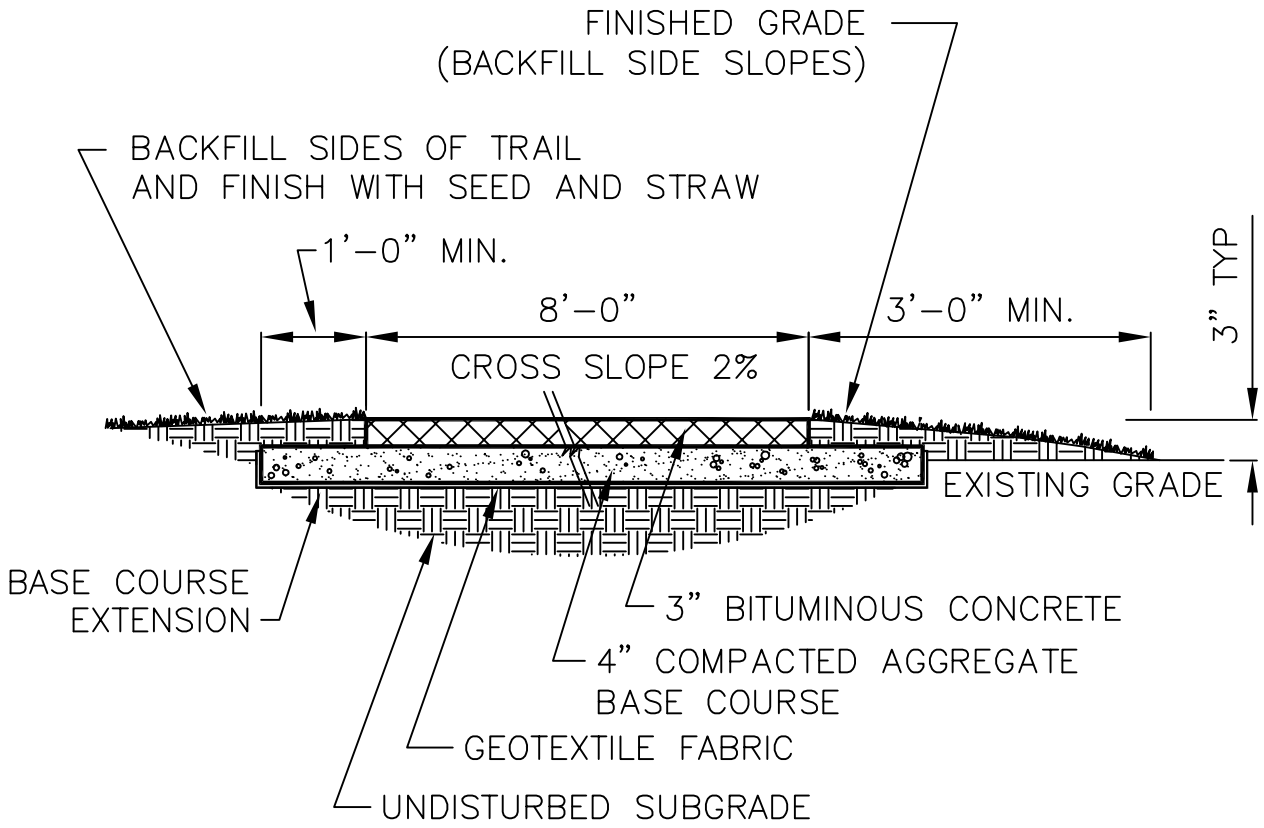
LS-10.0

POST SUPPORT DETAIL

GATE DETAIL

1. ADD RESTING POSTS FOR OPEN ARMS WHEN WIDTH OF ROADWAY EXCEEDS 12'-0"

SCALE: 3/4" = 1'-0"



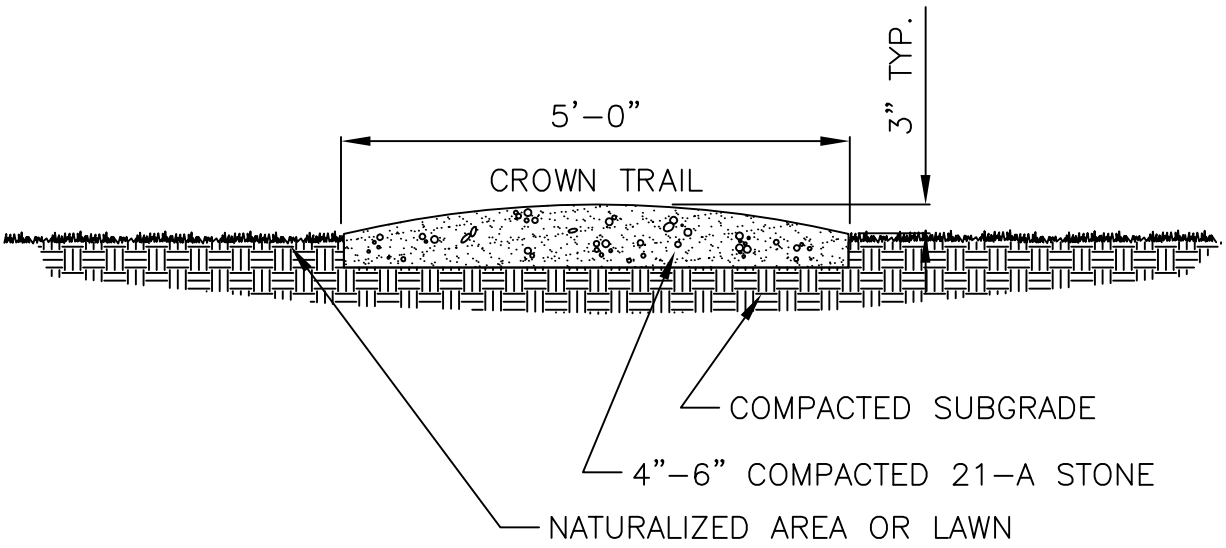
NOTES:

1. IF USED FOR EMERGENCY ACCESS, TRAIL IS TO MEET VEHICULAR STANDARDS PER LOUDOUN CO. FSM SECTION 4.200.A.1.C CATAGORY C1 ROAD.

TRAIL PAVING – IMPERVIOUS

TR–1.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

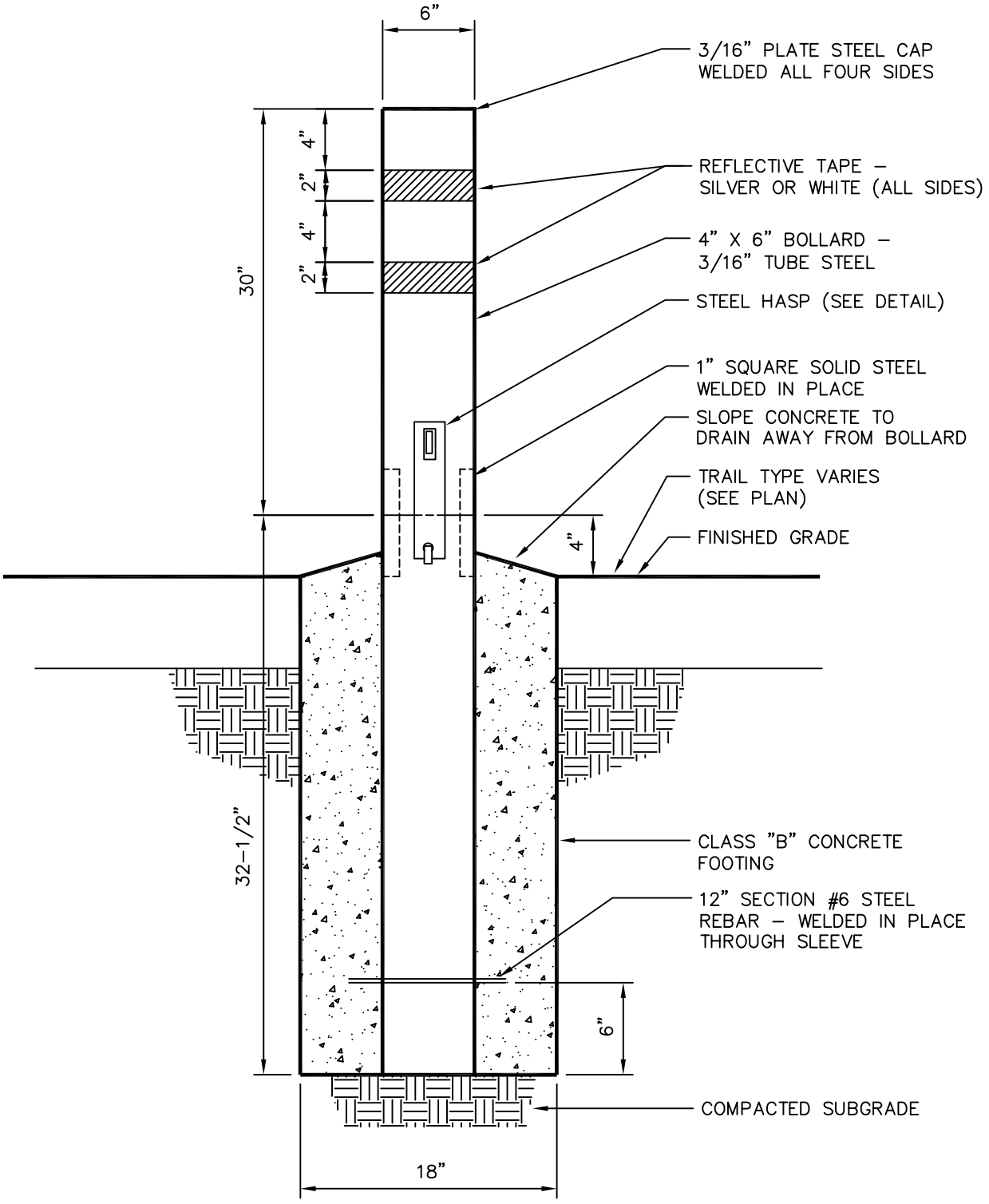


* PROVIDE POSITIVE DRAINAGE AWAY FROM TRAIL & ADJACENT GROUND AREA

TRAIL PAVING - PERVIOUS

TR-2.0

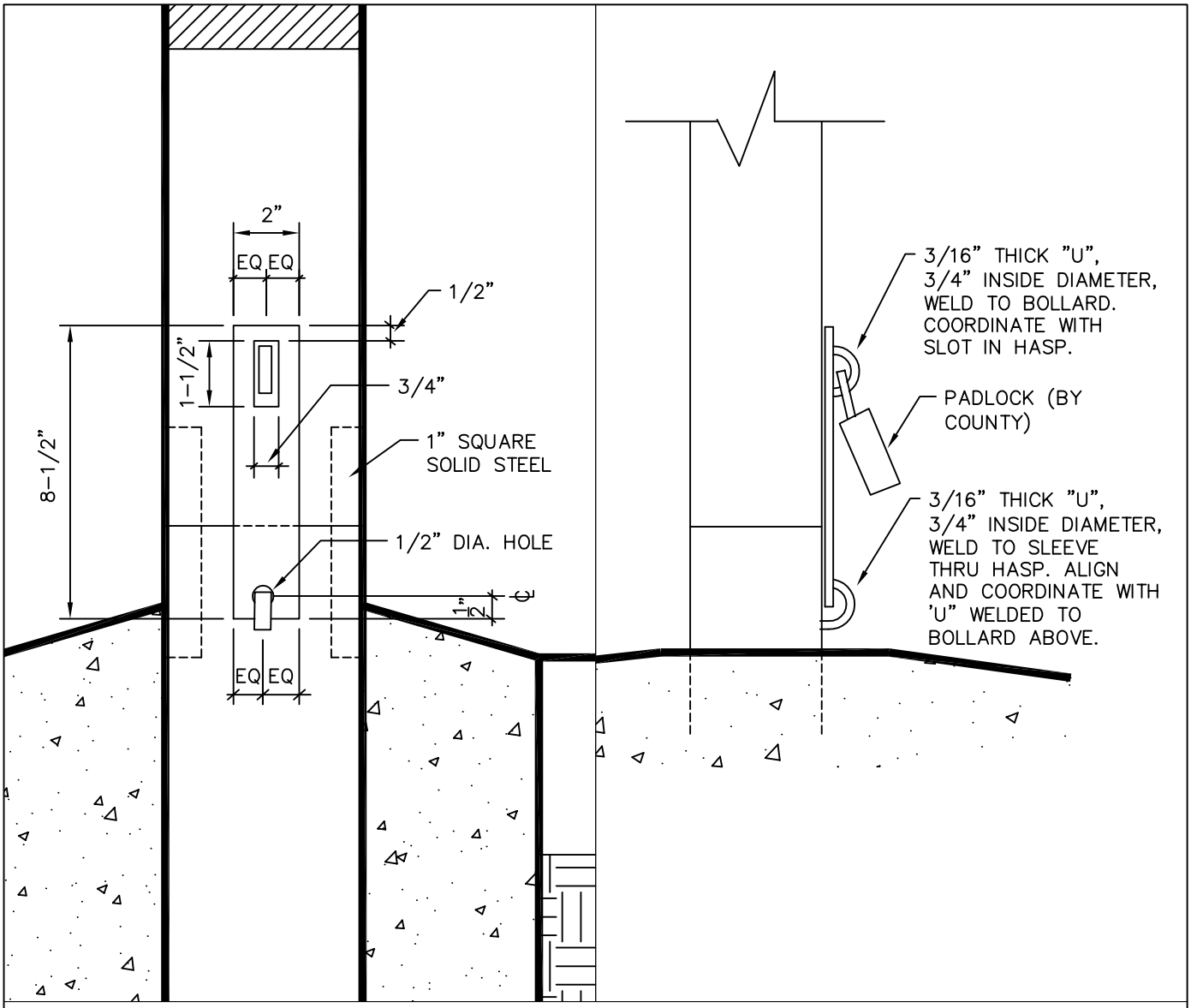
Department of Parks, Recreation and Community Services, Loudoun County, Virginia

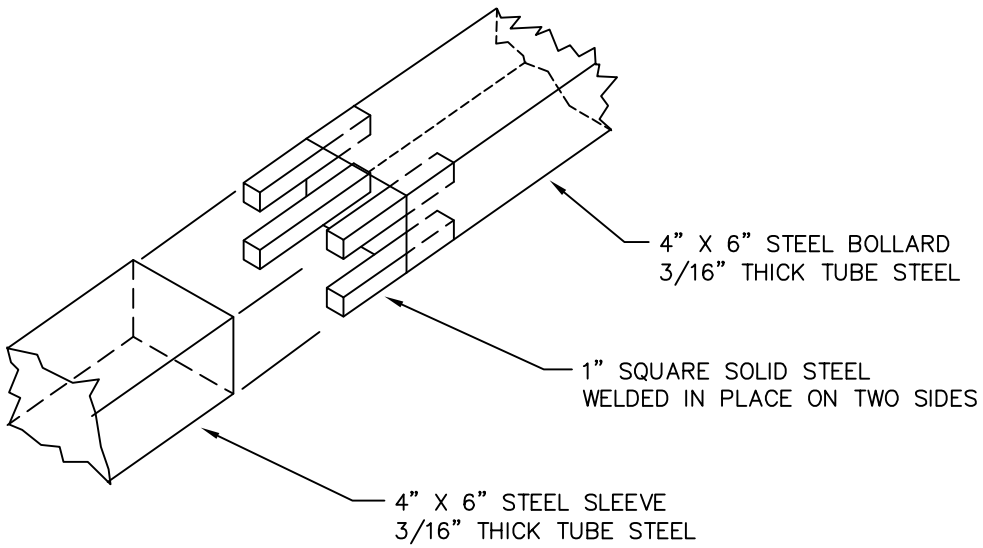


REMOVABLE LOCKING BOLLARD

TR–3.0

Department of Parks, Recreation and Community Services, Loudoun County, Virginia





BOLLARD POST-SLEEVE DETAILS

TR-3.1

Department of Parks, Recreation and Community Services, Loudoun County, Virginia

Appendix C

LOUDOUN COUNTY BOARD OF SUPERVISORS' POLICY FOR ACCEPTANCE AND MAINTENANCE OF HISTORICAL PROPERTIES

Adopted by Loudoun County Board of Supervisors
May 7, 1997

DEFINITIONS

The following definitions are provided for treatments that may be undertaken on historic properties:

Acquisition:

Is defined as the act or process of acquiring fee title or interest other than fee title of real property (including the acquisition of development rights or remainder interest).

Protection:

Is defined as the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss or attack, or to cover or shield the property from danger or damage. In the case of buildings and structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archaeological sites, the protective measure may be temporary or permanent.

Stabilization:

Is defined as the act or process of applying measures designed to reestablish by temporary or permanent means, a weather-resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation:

Is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than excessive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Rehabilitation:

Is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Restoration:

Is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Reconstruction:

Is defined as the act or process of depicting, by means of new construction, the form, features and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

RESOURCE EVALUATION CRITERIA

Criteria to be used in evaluating potential donation of land and/or buildings:

HISTORIC SIGNIFICANCE

In determining whether to accept a site, building, structure or object, the County of Loudoun will determine whether the site, building, structure or object has historic significance. A resource shall be deemed to have historic significance if it meets one or more of the following four criteria:

1. The resource is closely associated with one or more persons, events, activities, or institutions that have made a significant contribution to local, regional or national history; or

2. Contains buildings or structures whose exterior design or features exemplify the distinctive characteristics of one or more historic types, periods or methods of construction, or

which represent the work of an acknowledged master or masters; or

3. Has yielded, or is likely to yield, information important to local, regional or national history or prehistory; or

4. Possesses an identifiable character representative of the architectural and cultural heritage of Loudoun County.

INTEGRITY

In addition to determining a property's significance, the County of Loudoun will also determine the property's integrity. A property has integrity if it retains the architectural, historic or pre-historic identity which make it significant. In order to accept a site, building, structure or object, the County of Loudoun must determine both that the property is significant and that it retains integrity. To determine whether a property retains integrity, the County of Loudoun shall consider the seven aspects set out here. Based on the reasons for a property's significance, the County of Loudoun shall evaluate the property against those aspects that are the most critical measures of the property's integrity. The seven aspects are:

1. Location - the place where the historic property was constructed or the place where the historic event occurred. In cases such as sites of historic events, the location itself, complemented by the setting, is what people can use to visualize or recall the event.

2. Design - the combination of elements that create the form, plan, mass, structure, scale, balance and style of the property. Design results from the conscious decisions in the conception and planning of a property and may apply to areas as diverse as community planning, engineering, architecture, and landscape architecture. Principal aspects of design include organization of space, rhythm, proportion, scale, technology, and ornaments. (See Loudoun County Historic District Guildelines, Article 4, Division B by reference.)

3. Setting - the physical environment of the historic property, as distinct from the specific place where the property was built or the event occurred. The physical features that constitute setting may be natural or man-made, and may include topographic features, vegetation, simple man-made features such as paths or fences, and relationships of a building to other features or to open space.

4. Materials - the physical elements that were combined or deposited during a particular period of time and in a

particular pattern or configuration to form a historic property. The integrity of materials determines whether or not an authentic historic resource still exists.

5. Workmanship - the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. Workmanship may be expressed in vernacular methods of construction and plain finishes or in highly sophisticated configurations and ornamental detailing. It may be based on common traditions or innovative period techniques. Examples of workmanship include among others, tooling, carving, painting, graining, turning, joinery, cabinetry, carpentry, and stone and brick masonry.

6. Feeling - the property's expression of the aesthetic or historic sense of a particular period of time. Although it is itself intangible, feeling depends upon the presence of physical characteristics to convey the historic qualities that evoke feeling. Because it is dependent upon the perception of each individual, integrity of feeling alone will never be sufficient to support acceptance by the County of Loudoun.

7. Association - the direct link between an important historic event or person and a historic property. For a property to have integrity of association, the property should be the place where the event or activity occurred and should be sufficiently intact that it can convey that relationship.

GENERAL STANDARDS

The following general standards apply to all treatments undertaken on historic properties owned by the County of Loudoun.

1. Every reasonable effort shall be made to provide a compatible use for a property that requires minimal alteration of the building structure, or site and its environment, or to use a property for its originally intended purpose.

2. The distinguishing original qualities or character of a building, structure, or site and its environment shall not be destroyed. The removal or alteration of any historic material or distinctive architectural features should be avoided when possible.

3. All buildings, structures, and sites shall be recognized as products of their own time. Alterations that have no historical basis and which seek to create an earlier appearance shall be discouraged.

4. Changes, which may have taken place in the course of time, are evidence of the history and development of a building, structure, or site and its environment. These changes may have acquired significance in their own right, and this significance shall be recognized and respected.

5. Distinctive stylistic features or examples of skilled craftsmanship, which characterize a building, structure, or site, shall be treated with sensitivity.

6. Deteriorated architectural features shall be repaired rather than replaced, wherever possible. In the event replacement is necessary, the new material should match the material being replaced in composition, design, color, texture and other visual qualities. Repair or replacement of missing architectural features should be based on accurate duplications of features, substantiated by historical, physical, or pictorial evidence rather than on conjectural designs or the availability of different architectural elements from other buildings or structures.

7. The surface cleaning of structures shall be undertaken with the gentlest means possible. Sandblasting and other cleaning methods that will damage the historic building materials shall not be undertaken.

8. Every reasonable effort shall be made to protect and preserve archeological resources affected by, or adjacent to any acquisition, protection, stabilization, preservation, rehabilitation, restoration, or reconstruction project.

9. Every effort shall be made that acquisition of any property shall be accomplished with little or no impact on the tax payers.

SPECIFIC STANDARDS

The following specific standards for each treatment are used in conjunction with the eight standards above and, in each case begin with #10. For example, in evaluating acquisition projects, include the eight general standards plus the four specific standards listed under Standards for Acquisition.

STANDARDS FOR ACQUISITION

10. Careful consideration shall be given to the type and extent of property rights which are required to assure the preservation of the historic resource. The preservation

objective shall determine the exact property rights to be acquired.

11. Properties shall be acquired in fee simple when absolute ownership is required to insure their preservation.

12. The purchase of less-than-fee-simple interests, such as open space or facade easements, shall be undertaken when a limited interest achieves the preservation objective.

13. Every reasonable effort shall be made to acquire sufficient property with the historic resource to protect its historical, archeological, architectural, or cultural significance.

STANDARDS FOR PROTECTION

Deteriorated portions of a historic building may need to be protected through preliminary stabilization measures until additional work can be undertaken. Stabilizing may include structural reinforcement, weatherization, or correcting unsafe conditions. Temporary stabilization should always be carried out in such a manner that it detracts as little as possible from the historic building's appearance. Although it may not be necessary in every preservation project, stabilization is nonetheless an integral part of the treatment.

Appendix D

Department of Parks Recreation and Community Services

PROPOSED
PARK FACILITY MENU

Fiscal Impact Committee
November 13, 2006

PRCS
COUNTY OF LOUDOUN

Appendix D

Current PRCS Standards (Adopted 2005)

Facility	Standard
Regional Park	1 per 75,000 population
District Park	1 per 25,000 population
Community Park	1 per 10,000 population
Recreation Center	1 per 75,000 population
Teen Center	1 per 10,000 12-14 year olds
Senior Center	1 per 10,000 55+ year olds
Respite Center	1 per 15,000 55+ year olds

Park Facility Menu
(Estimated Cost 2006)

	Large Baseball 90'	Small Baseball 60'	Large Softball 300'	Small Softball 200'	Large Soccer 360x225	Small Soccer 240x150	Football	Lacrosse
Land (acres)								
Ballfield [A]	4.5	1.5	3	1.5	3	1.5	3	3
Parking	1	1	1	1	1	1	1	1
Total	**5.5**	**2.5**	**4**	**2.5**	**4**	**2.5**	**4**	**4**
Professional Services								
Geotechnical Report	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Third Party Inspection	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Total	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**
Infrastructure needed								
60 Parking spaces	270,000	270,000	270,000	270,000	270,000	270,000	270,000	270,000
Power	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Irrigation well	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
LCSA connection (water & sewer)	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Total	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**
Construction Costs								
Ballfield construction [B]	300,000 [1]	200,000 [2]	300,000 [1]	200,000 [2]	70,000 [3]	35,000 [4]	70,000 [3]	70,000 [3]
Irrigation - well required	15,000	10,000	15,000	10,000	15,000	10,000	15,000	15,000
Lights - power add'l	180,000	100,000	180,000	100,000	150,000	100,000	150,000	150,000
Total	**495,000**	**310,000**	**495,000**	**310,000**	**235,000**	**145,000**	**235,000**	**235,000**
Equipment								
Bleachers (2)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Player Benches (2)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Bases/Goals (4)/(2)	500	500	500	500	5,000	5,000	5,000	5,000
Total	**11,500**	**11,500**	**11,500**	**11,500**	**16,000**	**16,000**	**16,000**	**16,000**
Total	**876,500**	**691,500**	**876,500**	**691,500**	**621,000**	**531,000**	**621,000**	**621,000**

[A] suggests minimum space requirements for ballfields, with sufficient space around the playing field for fence lines, dugouts, spectator seating, and drainage issues.

[B] construction elements

11/12/06

B. Ballfield Construction Elements 2006

- Costs based on land within +/- 2% of final grade
- Costs based on PRCS 2006 Ballfield Construction Standards
- Costs provided are for single field construction
- Costs provided based on actual and professional estimates

1) Large Baseball/Softball - $300,000

Final grade per standard
Infield mix installed
Seeded outfield
Backstop safety netting
Black vinyl fence w/ 2 dugouts and 2 bullpens
Concrete pads for spectators and player benches

2) Small Baseball/Softball - $200,000

Final grade per standard
Infield mix installed
Seeded outfield
Backstop safety netting
Black vinyl fence w/ 2 dugouts and 2 bullpens
Concrete pads for spectators and player benches

3) Soccer/Football/Lacrosse - $70,000

Final grade per standard
Seeded field

4) Small Soccer (240x150) - $35,000

Final grade per standard
Seeded field

NOTE:
Developers seeking to enhance PRCS facilities beyond the adopted standards, such as providing upgrades to sod, Bermuda grass and/or artificial turf. Will require Board of Supervisors consideration for credit against the Capital Facility Impact (CFI) on a case by case basis.

PARK FACILITY MENU
COMMUNITY PARK (30 Acres)

CATEGORY 1 - Ballfields:

Community Park Standards suggests:

2 – Small Baseball (youth)	-	2 x 2.5 ac. =	5 acres
1 - Soccer (small)	-	1 x 2.5 ac. =	2.5 acres

Community Park Ballfield acreages:	**7.5 acres**

Estimated Cost (2006)*

Components	Small Baseball 60'	Small Softball 200'	Small Soccer 240x150
Land (acres)			
Ballfield [A]	1.5	1.5	1.5
Parking	1	1	1
Land Total	**2.5**	**2.5**	**2.5**
Professional Services			
Geotechnical Report	5,000	5,000	5,000
Third Party Inspection	5,000	5,000	5,000
Professional Services Total	**10,000**	**10,000**	**10,000**
Infrastructure needed			
60 Parking spaces	270,000	270,000	270,000
Power (see light cost below)	50,000	50,000	50,000
Irrigation well	25,000	25,000	25,000
LCSA connection (water & sewer)	15,000	15,000	15,000
Infrastructure needed Total	**360,000**	**360,000**	**360,000**
Construction Costs			
Ballfield construction [B]	200,000 [1]	200,000 [2]	35,000 [4]
Irrigation - well required	10,000	10,000	10,000
Lights (plus infrastructure cost above)	100,000	100,000	100,000
Construction Costs Total	**310,000**	**310,000**	**145,000**
Equipment			
Bleachers (2)	10,000	10,000	10,000
Player Benches (2)	1,000	1,000	1,000
Bases/Goals (4)/(2)	500	500	5,000
Equipment Total	**11,500**	**11,500**	**16,000**
Total	**691,500**	**691,500**	**531,000**

[A] suggests minimum space requirements for ballfields, with sufficient space around the playing field for fence lines, dugouts, spectator seating, and drainage issues.

[B] construction elements.

*Single field costs are for planning purpose and exceptions to the adopted capital facility standards. Single field maintenance is costly and discouraged unless collocation benefits exist. Infrastructure cost saving with the exception of parking may be achieved if a multiple facility option is proposed.

CATEGORY 2 - Passive/Trails:

Community Park Standards suggested for passive and trails = 19.5 acres
19.5 acres x $32,500 per acre = $633,750

CATEGORY 3 - Park Amenities:

Community Park related amenities collectively are suggested to utilize up to 3 acres depending on citizen input, identified amenities deficits and best use based on physical features. Include but, not limited to the following:

Basketball Court	Public Restroom/Concession
Inline Hockey	Tennis Courts
Nature Area	Trails
Picnic Pavilion/Areas	Volleyball Court
Playground	

PARK FACILITY MENU
DISTRICT PARK (75Acres)

CATEGORY 1 - Ballfields:

District Park Standards suggests:

5 - Small Baseball/Softball (youth) - 5 x 2.5 ac. = 12.5 acres
4 - Large Rectangles (soccer, football and or lacrosse) - 4 x 4 ac. = 16 acres

District Park Ballfield Acreages:	**28.5 acres**

Estimated Cost (2006)*

Components	Small Baseball 60'	Small Softball 200'	Large Soccer 360x225	Football	Lacrosse
Land (acres)					
Ballfield [A]	1.5	1.5	3	3	3
Parking	1	1	1	1	1
Land Total	**2.5**	**2.5**	**4**	**4**	**4**
Professional Services					
Geotechnical Report	5,000	5,000	5,000	5,000	5,000
Third Party Inspection	5,000	5,000	5,000	5,000	5,000
Professional Services Total	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**
Infrastructure needed					
60 Parking spaces	270,000	270,000	270,000	270,000	270,000
Power (see light cost below)	50,000	50,000	50,000	50,000	50,000
Irrigation well	25,000	25,000	25,000	25,000	25,000
LCSA connection (water & sewer)	15,000	15,000	15,000	15,000	15,000
Infrastructure needed Total	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**
Construction Costs					
Ballfield construction [B]	200,000 [2]	200,000 [2]	70,000 [3]	70,000 [3]	70,000 [3]
Irrigation - well required	10,000	10,000	15,000	15,000	15,000
Lights (plus infrastructure cost above)	100,000	100,000	150,000	150,000	150,000
Construction Costs Total	**310,000**	**310,000**	**235,000**	**235,000**	**235,000**
Equipment					
Bleachers (2)	10,000	10,000	10,000	10,000	10,000
Player Benches (2)	1,000	1,000	1,000	1,000	1,000
Bases/Goals (4)/(2)	500	500	5,000	5,000	5,000
Equipment Total	**11,500**	**11,500**	**16,000**	**16,000**	**16,000**
Total	691,500	691,500	621,000	621,000	621,000

[A] **suggests minimum space requirements for ballfields, with sufficient space around the playing field for fence lines, dugouts, spectator seating, and drainage issues.**

[B] **construction elements**

***Single field costs are for planning purpose and exceptions to the adopted capital facility standards. Single field maintenance is costly and discouraged unless collocation benefits exist. Infrastructure cost saving with the exception of parking may be achieved if a multiple facility option is proposed.**

CATEGORY 2 - Passive/Trails:

District Park Standards suggested for passive and trails = 38.5 acres
38.5 acres x $32,500 per acre = $ 1,251,250

CATEGORY 3 - Park Amenities:

District Park related amenities collectively are suggested to utilize up to 8 acres depending on citizen input, identified amenities deficits and best use based on physical features. Include but, not limited to the following:

Amphitheater	Playground
Community Gardens	Ponds
Basketball Court	Public Restroom/Concession
Inline Hockey	Skate Plaza/Skate Park
Nature Area	Tennis Courts
Off Leash Areas	Trails
Picnic Pavilion	Volleyball Court

PARK FACILITY MENU
REGIONAL PARK (minimum 200 Acres)

CATEGORY 1 – Ballfields:
Regional Park Standards suggests 19 ballfields as follows:

5 - Small Baseball/Softball (youth) - 5 x 2.5 ac. = 12.5 acres
4 - Large Softball - 4 x 4 ac. = 16 acres
10 Large Rectangular (soccer, football and or lacrosse) - 10 X 4 ac. = 40 acres

Regional Park Ballfield Acreages:	**68.5 acres**

Estimated Cost (2006)*

Components	Small Baseball 60'	Large Softball 300'	Small Softball 200'	Large Soccer 360x225	Football	Lacrosse
Land (acres)						
Ballfield [A]	1.5	3	1.5	3	3	3
Parking	1	1	1	1	1	1
Land Total	**2.5**	**4**	**2.5**	**4**	**4**	**4**
Professional Services						
Geotechnical Report	5,000	5,000	5,000	5,000	5,000	5,000
Third Party Inspection	5,000	5,000	5,000	5,000	5,000	5,000
Professional Services Total	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**	**10,000**
Infrastructure needed						
60 Parking spaces	270,000	270,000	270,000	270,000	270,000	270,000
Power (see light cost below)	50,000	50,000	50,000	50,000	50,000	50,000
Irrigation well	25,000	25,000	25,000	25,000	25,000	25,000
LCSA connection (water & sewer)	15,000	15,000	15,000	15,000	15,000	15,000
Infrastructure needed Total	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**	**360,000**
Construction Costs						
Ballfield construction [B]	200,000 [2]	300,000 [1]	200,000 [2]	70,000 [3]	70,000 [3]	70,000 [3]
Irrigation - well required	10,000	15,000	10,000	15,000	15,000	15,000
Lights (plus infrastructure cost above)	100,000	180,000	100,000	150,000	150,000	150,000
Construction Costs Total	**310,000**	**495,000**	**310,000**	**235,000**	**235,000**	**235,000**
Equipment						
Bleachers (2)	10,000	10,000	10,000	10,000	10,000	10,000
Player Benches (2)	1,000	1,000	1,000	1,000	1,000	1,000
Bases/Goals (4)/(2)	500	500	500	5,000	5,000	5,000
Equipment Total	**11,500**	**11,500**	**11,500**	**16,000**	**16,000**	**16,000**
Total	**691,500**	**876,500**	**691,500**	**621,000**	**621,000**	**621,000**

[A] **suggests minimum space requirements for ballfields, with sufficient space around the playing field for fence lines, dugouts, spectator seating, and drainage issues.**

[B] **construction elements**

***Single field costs are for planning purpose and exceptions to the adopted capital facility standards. Single field maintenance is costly and discouraged unless collocation benefits exist. Infrastructure cost saving with the exception of parking may be achieved if a multiple facility option is proposed.**

CATEGORY 2 - Passive/Trails:

Regional Park acreage suggested for passive and trails = 116.5 acres
116.5ac. X $17,520 per acre = $2,041,080

CATEGORY 3 - Park Amenities

Regional Park related amenities collectively are suggested to utilize up to 15 acres depending on citizen input, identified amenities deficits and best use based on physical features. Include but, not limited to the following:

Amphitheater	Public Restroom/Concession	Special Event Field
Basketball Court	Nature Center	Specialty Facility
Boat Access	Off Leash Areas	Support Facility/
Camping	Outdoor Pool	Maintenance/Office
Community Gardens	Picnic Pavilion/Areas	Storage Yards
Equestrian Area	Playground	Tennis Courts
Inline Hockey	Ponds/Lake	Trails/Exercise Trails
	Skate Plaza/Skate Park	Volleyball Court